

332200

JPRS 84533

13 October 1983

19981113 114

East Europe Report

ECONOMIC AND INDUSTRIAL AFFAIRS

No. 2459

DTIC QUALITY INSPECTED 4

FBIS

FOREIGN BROADCAST INFORMATION SERVICE

REPRODUCED BY
NATIONAL TECHNICAL
INFORMATION SERVICE
U.S. DEPARTMENT OF COMMERCE
SPRINGFIELD, VA. 22161

8
62
A04

NOTE

JPRS publications contain information primarily from foreign newspapers, periodicals and books, but also from news agency transmissions and broadcasts. Materials from foreign-language sources are translated; those from English-language sources are transcribed or reprinted, with the original phrasing and other characteristics retained.

Headlines, editorial reports, and material enclosed in brackets [] are supplied by JPRS. Processing indicators such as [Text] or [Excerpt] in the first line of each item, or following the last line of a brief, indicate how the original information was processed. Where no processing indicator is given, the information was summarized or extracted.

Unfamiliar names rendered phonetically or transliterated are enclosed in parentheses. Words or names preceded by a question mark and enclosed in parentheses were not clear in the original but have been supplied as appropriate in context. Other unattributed parenthetical notes within the body of an item originate with the source. Times within items are as given by source.

The contents of this publication in no way represent the policies, views or attitudes of the U.S. Government.

PROCUREMENT OF PUBLICATIONS

JPRS publications may be ordered from the National Technical Information Service, Springfield, Virginia 22161. In ordering, it is recommended that the JPRS number, title, date and author, if applicable, of publication be cited.

Current JPRS publications are announced in Government Reports Announcements issued semi-monthly by the National Technical Information Service, and are listed in the Monthly Catalog of U.S. Government Publications issued by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Correspondence pertaining to matters other than procurement may be addressed to Joint Publications Research Service, 1000 North Glebe Road, Arlington, Virginia 22201.

13 October 1983

EAST EUROPE REPORT

ECONOMIC AND INDUSTRIAL AFFAIRS

No. 2459

CONTENTS

INTERNATIONAL AFFAIRS

Briefs

USSR, Hungarian Trade Officials	1
RSFSR Minister Ends Visit	1
Bahyl Ends Hungary Visit	1
CEMA Discusses Oil	1
Soviet Vehicle Agreement	2

BULGARIA

Agroindustrial Chief Discusses Irrigation (Aleksandur Petkov; KOOOPERATIVNO SELO, 9 Aug 83).....	3
-----------------------------------------------------------------------------------------------------	---

CZECHOSLOVAKIA

Briefs

Dubai Trade Delegation	8
Visiting FRG Parliamentarians	8
Expanded Winter Crops Sowing	8

HUNGARY

Report on Expansion of Contractual Business (NEPSZABADSAG, 16 Sep 83).....	9
-------------------------------------------------------------------------------	---

Briefs

Agriculture Loan Negotiated	11
-----------------------------	----

POLAND

Alternative Debt Service, Rescheduling Models Published (Joanna Kotowicz, et al.; ZYCIE GOSPODARCZE, Nos 32, 33, 7, 14 Aug 83).....	12
-------------------------------------------------------------------------------------------------------------------------------------------	----

New Financial System in State Farms Discussed (Andrzej Bienkowski, et al.; NOWE ROLNICTWO, No 5, May 83).....	30
Youth Daily Reviews Economic Reform (SZTANDAR MLODYCH, 19 Sep 83).....	38

ROMANIA

Measures To Achieve Energy Independence Examined (Constantin Bratianu; ENERGETICA, Apr 83).....	41
Views of Technology Transfer Aired by Economic Journal (Yolanda Eminescu; REVISTA ECONOMICA, No 34, 26 Aug 83).....	51
Coal Miners Fail To Fulfill Nine-Month Plan (SCINTEIA, 1 Oct 83).....	56

INTERNATIONAL AFFAIRS

BRIEFS

USSR, HUNGARIAN TRADE OFFICIALS--At the International Engineering Trade Fair in BRNO Bohumil Urban, minister of foreign trade, received yesterday Boris Ushakov, the head of the Chemical Industry Department of the USSR Council of Ministers. He discussed with him some questions concerning deliveries of Czechoslovak chemical equipment to the Soviet Union and in particular of technical lines for the manufacture of fertilizers. Minister Urban also received Otto Herkner, Hungarian vice minister of foreign trade, with whom he discussed questions concerning the development of trade cooperation between Czechoslovakia and Hungary. The talks were held in connection with the drawing up of a protocol on the exchange of goods in the coming year. [Text] [LD171006 Prague Domestic Service in Czech and Slovak 0000 GMT 15 Sep 83]

RSFSR MINISTER ENDS VISIT--On Wednesday in Prague, CSSR Minister of Agriculture and Food Miroslav Toman had talks with Stepan Christoplyasov, RSFSR minister of the food industry, at the close of the latter's working visit to Czechoslovakia. The two ministers exchanged information on the situation and prospects of the production of foodstuffs, on improving the food products' quality, and speeding up their innovation cycle. [Text] [AU111549 Prague RUDE PRAVO in Czech 8 Sep 83 p 2]

BAHYL ENDS HUNGARY VISIT--P. Bahyl, CSSR minister of general engineering, has concluded his visit to Hungary, where he had talks with L. Mehes, minister of industry of the Hungarian People's Republic, on the fulfillment of the two countries' plans of industrial production and on the implementation of the intergovernmental agreement on cooperation in the production and deliveries of components and complete units of road transport vehicles, building machinery, and agricultural machinery. [Text] [AU111549 Prague RUDE PRAVO in Czech 8 Sep 83 p 7]

CEMA DISCUSSES OIL--Budapest, 20 September (MTI)--A 4-day CMEA conference on the supply of oil products in socialist countries opened in Budapest Tuesday. Managers of oil distributing companies of eight European socialist countries will discuss issues on the trade, storing and packaging of oil products, and energy reduction. Lectures will be given on the reduction of losses, environment, automatization and the economic use of hydrocarbons. [Text] [LD210250 Budapest MTI in English 1037 GMT 20 Sep 83]

SOVIET VEHICLE AGREEMENT--Budapest, 20 September (MTI)--Under a 800-million rouble agreement of Hungary's Mogurt and the Soviet Avotexport companies, which was signed today in Budapest, next year vehicle industrial products are to be exchanged in the value of 670 million and 127 million roubles. The car industry is an important area of bilateral economic relations. At present Hungary ranks among the world's leading bus manufacturers with an annual output of 14,000 buses. Extensive cooperation with all CMEA countries, primarily the Soviet Union, covers not only the exchange of finished products, but also the manufacture of car units. [Excerpts] [LD210250 Budapest MIT in English 1723 GMT 20 Sep 83]

CSO: 2500/11

BULGARIA

AGROINDUSTRIAL CHIEF DISCUSSES IRRIGATION

Sofia KOOPERATIVNO SELO in Bulgarian 9 Aug 83 p 1-2

[Article by Aleksandur Petkov, chairman of the Executive Committee of the Central Council of the National Agroindustrial Union: "Irrigated Farming Is a Decisive Intensification Factor"]

[Text] Under the conditions of comprehensive agricultural intensification irrigation becomes a basic factor which determines crop increases and the stable development of the entire sector. This was felt particularly strongly this year, when a severe drought faced our agriculture with a major test. Bulgaria is one of the European countries with limited water resources, insufficient precipitation and frequent droughts. Thus, for instance, there were protracted droughts during half of the 1955-1982 period; the rest of the time the volume of precipitation was insufficient for the normal development of the crops. This means that in terms of the moisture factor our country is in the risk agriculture zone, which calls for the most efficient utilization of hydrologic reclamation. That is why the party and the state show steady and great concern for irrigated farming.

The BCP Politburo decision on the accelerated development of irrigated farming, which was recently adopted on Comrade Todor Zhivkov's initiative, is another vivid manifestation of this concern. He gave us one more example of communist dissatisfaction with accomplishments. With his characteristic directness he exposed our inability to make use of hydrologic land reclamation, this most dynamic agricultural intensification factor. Furthermore, the first party and state leader indicated the solution to the problem: the adoption of a comprehensive approach, and substantiated the most efficient mechanism for this type of irrigation.

A specific target program is being drafted for the accelerated development of irrigated farming. The targets are being defined and graded in terms of time and efficiency, and the deadlines for their designing and construction are being refined. Priority is being given to supplying with water existing areas, draining and building new irrigation systems to replace existing ones. New water sources are being developed on an exceptional basis only.

All problems will be resolved on a contemporary technical level with a view to achieving high labor productivity and the fullest possible utilization of water resources, thus obtaining maximal output at minimal costs.

The comprehensive approach requires the application of new and more efficient organization of construction and utilization of irrigated areas in the course of the planning and application of the investment process. Our past experience and the almost tripled size of the construction program demand the overall reorganization of design work based on a scientific approach and global experience, considered through the lens of new criteria and indicators. This means that the projects must provide water for no less than 4-5 sprayings if we are to obtain yields consistent with the biological possibilities of strains and hybrids. The criteria used in the evaluation of the efficiency of irrigation systems must be changed radically and irrigated areas must mandatorily yield more than two crops per season.

That is why the designing of systems and projects will be based on competition. The projects will be examined by a council of experts on the basis of the most accurate crop structure and the obtaining of the highest end results. In this manner capital investments will be concentrated on a priority basis wherever they are more profitable for the national economy. This refers above all to the most suitable land for the application of intensive and superintensive technologies. The design organizations will be required to submit realistic indicators on the volume of capital investments, yields, volume of output, profitability and time for the recovery of capital investments.

To ensure the fast and efficient solution of design problems, Vodproekt and all Bulgarian institutes and organizations engaged in these activities must be supplied with computers and other modern equipment in order to develop multi-variant solutions and apply contemporary methods in assessing the projects and apply standardization and modular solutions which permit repeated utilization.

In order to have 15-16 million decares in irrigated areas by 1995, with a full water supply and suitable for the use of intensive farming methods, the new comprehensive approach should find its place in the investment process. This will require the establishment of a specialized organization under the Water Resources DSO [State Economic Trust], which will use global and domestic experience and apply tried and approved technologies which will make the total mechanization of production processes possible. Construction rayons will be set up to handle the largest systems. They will cover the entire territory along a river bed or irrigation system. These rayons will be equipped with highly productive specialized equipment, such as rotary excavators, concrete pouring machines and others. New soil-protection technologies will be applied. The internal canal grid will be built by the currently existing enterprises of the Water Resources DSO. In turn, the agroindustrial complexes will undertake most of the development of their own water sources and irrigation fields.

The large construction areas will also have centers for the production of steel pipes and other equipment and concrete manufacturing facilities equipped with transportation and other highly productive equipment. They will use a minimal amount of manual labor.

A real possibility exists of resolving in its entirety the problem of draining at a faster pace, a measure which yields high and rapid investment returns. In the past we corrected river beds without developing adjacent areas. The

comprehensive approach in the implementation of the new plans calls for doing everything necessary for the full utilization of such fertile land along with the correction of river beds.

The program consistently draws attention to the restructuring and updating of a large percentage of existing irrigation systems. The main task in reconstruction, new engineering development and construction is to ensure a maximal number of waterings needed in growing intensive crops, in which labor productivity per irrigation worker jumps from 15-16 to 100-150 decares per shift.

Consequently, it becomes a question not of irrigation in general but of the type of irrigation in which the land, water and plant biological possibilities will be used most efficiently. This means that the comprehensive approach to the development of irrigated farming calls for making decisive improvements in irrigation technology. This problem is of great importance not only in terms of upgrading labor productivity but the quality of irrigation and the most efficient utilization of the water.

We must also break with traditional underproductive technologies and undertake a mass conversion to the application of the latest highly efficient irrigation methods. Both domestic and foreign experience indicate that we cannot convert to standardization in this direction routinely. We must apply a differentiated specific approach based on the type of culture raised and existing soil and topographic conditions.

One of the most effective technologies has proved to be that of improved gravity irrigation, which should be applied most extensively throughout the country. Naturally, its use involves taking a number of mandatory steps, such as the preliminary basic and regular levelling of the ground, the use of a great variety of efficient solutions based on highly efficient equipment, the completion of the water distribution network of open canals, the development of a technological morally and materially encouraging labor organization, etc. The basic element in gravity irrigation ground levelling will require the use of wide-span levelling machines, scrapers and bulldozers using laser equipment, which will fully automate processes and improve the quality of the work.

Under such circumstances, in the final stage of the implementation of the program, gravity irrigation can be applied on 6 million decares, reaching a seasonal labor productivity in excess of 500 decares.

Spraying will remain the principal irrigation method. In order for it to be highly efficient, however, the latest spraying machines and installations with a shift productivity in excess of 80 decares, low-pressure and less energy-intensive spraying systems must be used. All of this is entirely achievable, particularly through cooperation with the USSR and other socialist countries in the production of a highly efficient and reliable spraying equipment.

The problem of drip irrigation, including that of pulse control, will be resolved as well. We are familiar with its advantages: water, nutritive substances and herbicides and full irrigation automation. However, since this technology demands substantial capital investments per unit of irrigated area, it will be used essentially in greenhouses and the growing of perennials.

The use of a comprehensive approach in the development of irrigated agriculture forces us to develop a scientific crop structure for irrigated areas and crop rotations. For the time being, no precise criteria and stipulations regarding the type of crops which could and should be raised per decare of irrigated land exist. A scientific structure means, above all, relating high yields to production costs and achieving maximal high-quality output at the lowest possible cost.

The intensive utilization of irrigated areas, with a definition of the maximal coefficient for the raising of predecessor, second, third and intermediary crops is an important current task. The present situation is rather unfavorable. All in all, 1,950,000 decare were planted in second and intermediary crops in the country in 1982. This is no more than 17.9 percent of all irrigated areas excluding perennials.

Our immediate task is to apply modern advanced technologies and equipment, to supply the various crops with fertilizers, herbicides and plant protection chemicals and to upgrade steadily farming standards in the sowing, raising and cultivating crops grown on irrigated areas.

The application of intensive and advanced technologies and scientific crop control in the years to come should yield results consistent with the biological possibilities of the strains used. That is why a qualitatively new system for irrigated farming will be developed, based on the latest scientific and technical accomplishments and leading domestic and foreign experience. It will include the application of intensive crop rotation in order to harvest two or three crops annually, a new soil cultivation system, the use of intensive and superintensive crop growing technologies, highly efficient irrigation methods, etc.

These are the main problems which must be resolved in the area of irrigated agriculture in the next few years. The question now is how to begin and where. The answer was provided by Comrade Todor Zhivkov with exceptional clarity and precision.

Two million decare of corn must be planted on irrigated land as early as 1984. They must be fully supplied with the necessary amount of water for four-five or more waterings and the application of intensive and super-intensive technologies which guarantee the growing of no less than 1,000 kilograms of grain per decare. These areas must be assigned to individual brigades, agroindustrial complexes and okrugs without delay. The necessary reclamation and agrotechnical measures they require in order to obtain the maximally possible biological yields from all hybrids must be refined.

Next year another million decare of irrigated areas must be developed with all the necessary reclamation measures, so that by 1985 3 million decare of irrigated land may be planted in corn. It is on these areas that the Water Resources DSO must focus its draining, updating and development efforts in order to ensure the availability of water to meet the full requirements of the plants.

At the same time, new irrigated areas must be prepared so that 3.5 million decares in corn, 2 million decares in alfalfa and 600,000 decares in soybeans may be planted in 1986. These guaranteed-yield areas must become the basis for the lasting solution of the country's grain fodder problem.

Naturally, this major problem cannot be resolved without finding a new solution to the problem of cadre training -- agronomists, engineers, technicians and performing cadres. All specialists and workers must master the new intensive technologies for raising crops on irrigated areas, the most progressive and highly efficient irrigation methods and most suitable labor organization methods.

The efficient organization of irrigation work will be developed on the basis of the new brigade organization of labor in each okrug and agroindustrial complex. Scientific water outlay norms for the various crops and water-use incentives and penalties will be applied. If yields are lower than planned and if water is used improperly due to subjective reasons the cost of the water will be raised several hundred percent, while a number of moral and material incentives will be applied whenever plans are overfulfilled.

The need for modern scientific services and material support is obvious in the formulation of the target program and the adoption of the comprehensive approach in the further development of irrigated farming. This calls for the most energetic participation of the Agricultural Academy, the sectorial scientific institutes, scientific workers and specialists in crop growing, hydroreclamation, irrigation, hydrology and meteorology.

Problems related to the development of a modern material and technical base will be resolved on an essentially new basis. Design and construction organizations will be subjected to extensive technical reorganization.

The great and responsible assignments related to the accelerated development of irrigated farming demand the involvement of other ministries and departments -- the Ministry of Construction and Architecture, Ministry of Chemical Industry, Ministry of Electronics, Ministry of Foreign Trade, State Committee for Planning and others. Naturally, the main responsibility will be assumed by the Central Council of the National Agroindustrial Union, the okrug agroindustrial unions, the agroindustrial complexes and the Water Resources DSO.

Everything now depends on our efficiency, organizational talent and ability to implement the party plans quickly and competently.

5003

CSO: 2200/139

CZECHOSLOVAKIA

BRIEFS

DUBAI TRADE DELEGATION--At the invitation of the CSSR Chamber of Commerce and Industry, a delegation of the Dubai Chamber of Commerce and Industry from the United Arab Emirates paid a visit to the CSSR. The purpose of the visit was to establish new commercial ties with Czechoslovak foreign trade enterprises and to contribute to further developing trade between Czechoslovakia and the United Arab Emirates. The head of the delegation, Saeed Jun Al Naboodah [name as published], chairman of the Dubai Chamber of Commerce and Industry, was received by CSSR Minister of Finance Leopold Ler. [Text] [Prague RUDE PRAVO in Czech 3 Sep 83 p 2 AU]

VISITING FRG PARLIAMENTARIANS--On Friday in Prague, a group of FRG Bundestag deputies, members of the Committee for Agriculture, Food, and Forestry, who are on a study visit to the CSSR, was received by Evzen Erban, chairman of the Foreign Affairs Committee of the Chamber of Nations, and by representatives of the Agriculture and Food Committees of both chambers of the CSSR Federal Assembly. The reception was attended by Klaus Meyer, ambassador of the FRG to the CSSR. [Text] [Prague RUDE PRAVO in Czech 3 Sep 83 p 2 AU]

EXPANDED WINTER CROPS SOWING--This year's plan foresees the expansion of the sowing areas of all winter grain crops. In the Czech Socialist Republic, the area sown with winter wheat will be expanded to 750,000 hectares, that sown with winter rye to 155,000 hectares, that sown with winter barley to 124,000 hectares, and that sown with winter mixtures to 110,000 hectares. The most notable increase concerns winter wheat, where the sowing plan exceeds the 1982 plan by 32,000 hectares and the 1981 plan by 62,000 hectares. According to preliminary results, in the Czech Socialist Republic winter wheat yielded a per hectare average of 4.85 metric tons this year, which is a record, while spring barley, for example, yielded only 3.84 metric tons for each hectare. [Summary] [Prague ZEMEDELSKE NOVINY in Czech 6 Sep 83 p 1 AU]

CSO: 2400/12

REPORT ON EXPANSION OF CONTRACTUAL BUSINESS

AU220645 Budapest NEPSZABADSAG in Hungarian 16 Sep 83 p 4

["E.CS." report: "It Has Been Discussed by the Council of Ministers: The Sphere of Contractual Businesses Is To Be Expanded"]

[Text] For more than 2 and 1/2 years, since 1 January 1981, inns, restaurants and grocery stores and other retail trade businesses have been able to operate on a contractual basis. Their number has reached 8,000. Some 30 percent of the catering enterprises, but only 10 percent of grocery stores, are operating in this way at the moment.

We have grown accustomed and--with the exception of a few--have come to like these stores. Experience of their activities to date is favorable. As a result of a better supply and more courteous service, shopping conditions have generally improved; and these shops have expanded their business hours by about 10 percent. The fact that the turnover of leased shops increased two to three times more quickly than the shops operating in the traditional way bears this out. These shops, therefore, operate more efficiently and more economically than before. They supply much more profit to the enterprises and thus increase the revenue of the people's economy.

Contractual operation was a completely new system at its introduction, and certain problems came up which required modification of regulations concerning these businesses. That is the reason the Council of Ministers approved at its session yesterday the modification of the 1980 decree concerning the operation of contractual and leased retail trade and catering enterprises. Under the decree, which is to be published and put into effect in the near future, the sphere of leasable stores will be enlarged. Previously this system could be introduced only at stores kept by organizations pursuing economic activity. According to the modified decree, the possibility of contractual operation will be extended to procurement centers, associations, council and tourist offices and other shops operated by noneconomic organizations.

It has become clear in the past few years that 5 years is the realistic time span necessary for the secure running of a business at a newly-introduced and developed shop, but in many cases the enterprises put the stores on contract for only 2 or 3 years. The new decree stipulates that the contract can be extended without competitive bidding in case of mutual agreement, but only up to a maximum of 5 years from the signing of the contract.

It was a problem, too, that a family could operate only one leased store. However, considering that there is no such restriction in the latest regulations concerning small artisans and private tradesmen, this restriction has been abolished with regard to contractual businesses as well. Thus, both husband and wife can bid for a business.

The previous regulation did not consider cases in which the head of a leased shop could not keep open continuously owing to illness, army service, or other reasons. The new regulation enables the contract to be suspended for 6 months at the most in such cases.

Of course, not every business manager has made ends meet; thus, 10 percent of the contracts have been cancelled in the last 2 years, mainly because business managers could not honor their financial commitments. The court has had the final word in controversial cases, and meanwhile the shops in question were closed. Therefore, the new regulation states that the termination of a contract must be regarded as accepted if the other party does not raise an objection within 8 days. In case of a lawsuit, the court can, with a temporary order, oblige the business manager to place the shop at the disposal of the enterprise without delay.

Commensurate with the Council of Ministers decree, the Minister of Domestic Trade also has modified regulations. The manner of bidding at discussions of tenders and other questions are regulated in the decree. As a result of the new regulations, there will no doubt be a further expansion and diversification of the sphere of contractual shops, thus improving supplies to the population in other areas, too.

CSO: 2500/10

HUNGARY

BRIEFS

AGRICULTURE LOAN NEGOTIATED--Hungary is raising a loan of 200 million dollars from a consortium of West European, Japanese and Arab financial institutions. According to the agreement which was signed in Washington, the credit can be utilized for the development of grain storage and the mechanization of agriculture, as well as for the realization of programs aiming at the rationalization of energy utilization. The loan must be repaid within the next 8 and 1/2 years; the interest rate is in line with the rate of interest on credits granted in London and New York. [Text] [LD270418 Budapest Domestic Service in Hungarian 0900 GMT 26 Sep 83]

CSO: 2500/12

ALTERNATIVE DEBT SERVICE, RESCHEDULING MODELS PUBLISHED

Warsaw ZYCIE GOSPODARCZE in Polish Nos 32 and 33, 7, 14 Aug 83

[Article by Joanna Kotowicz, Zdzislaw Sadowski, and Andrzej Szeworski: "Re-financing Alternative"]

[7 Aug 83, pp 1, 4]

[Text] This article is the first part of a report prepared for the conference on the 1986-1995 long-term plan organized by the Institute for the National Economy, the "Poland 2000" Committee of the Polish Academy of Sciences, and the Planning Commission. The second part of the work, entitled "Alternative of Reducing Indebtedness," is to be published in the next issue.

Predictive research conducted with the aid of the MODO simulation model¹ was initiated in 1978. Its initial goal was to analyze the formation of macro-economic ratios for the medium-term planning timeframe (the 1981-1985 5-year period), taking into account the presently occurring and anticipated limitations, primarily in the sphere of foreign trade turnover and the amount of indebtedness, and then to describe the range of choices and the directions of the probable alternatives for economic strategy in the period under investigation. Economic practice at the beginning of the 1980's confirmed the correctness of the assumptions adopted in the model and of the results obtained in the initial phase of the research.

We repeated the research at the beginning of 1981, aiming at an analysis of the basic economic ratios up to the end of the current decade (i.e. up to 1990). This research allowed formulating the hypothesis that searches for practical political and economic solutions for this period should be aimed at linking the strategy of sharp import restrictions, and an extended time-frame for restoring imports to the initial level, to negotiations on moratoriums on debt repayment.

Such a solution should have led in a relatively short period to the initiation of a process of a reduction of the economy's debts, with a simultaneous diminishing of the rate of the inevitable fall in consumption. The strategy

presented of a restrictive import policy combined assumptions of a considerable limitation on the volume of imports from the capitalist countries in 1981 with a simultaneous radical restructuring of the utilization of these imports. This would allow maintaining exports to the capitalist countries at the 1980 level, in spite of a sharp drop in production and an even sharper drop in consumption. As a result, there could be a marked improvement in the balance of payments, and in the longer term, initiation of a process of economic growth and a reduction in the rate of indebtedness.

The assumption of a restrictive import policy that we adopted turned out to be partially correct. In actuality, there was a sharp drop in imports from the capitalist countries; the course of this process, however, was abrupt and spontaneous in nature, and was not subject to restructuring actions. It caused a snowballing process of disruption of coproduction ties in the economy, a sudden drop in production and exports, a deterioration in the social climate, and a negative effect of this in turn on the level of production.

Under these governing conditions and on the basis of the MODO model, at the beginning of 1982 we undertook an attempt to continue predictive research and to look for an alternative economic strategy aimed at initiating a process of reducing the degree of indebtedness.

The purpose of the research undertaken can thus be formulated as follows:

- 1) observation of the probable effect of the new limiting conditions (new in relation to the 1980 prediction) and the dangers resulting from them on the basic economic ratios, and mainly on the sphere of foreign trade turnover and the level and growth rate of indebtedness;
- 2) looking for alternatives ("paths") in the strategy of reducing the burden on the balance of payments represented by servicing foreign debt, and initiating more dynamic economic processes and intensifying the conditions required to realize them.

In order to carry out the research task thus defined, we performed an analysis of two alternatives for macroeconomic ratios:

- 1) an alternative with permanent debt refinancing, and
- 2) a hypothetical alternative with a gradual reduction of the economy's indebtedness.

Designing these alternatives required verification of the assumptions adopted in the previous research, in view of the occurrence in 1981 of the mutually determined limitations already mentioned, i.e. a) the abrupt drop in the level of imports from the capitalist countries, and the lack of possibilities for a rapid increase in these imports; b) the considerable decline in the economy's export capacity, and the anticipated stagnation in exports; and c) the sharp limitation on the availability of foreign credit as a result of the decline in Poland's credibility in the capital market.

At the same time, it should be explained that the further intensification of limitations on imports from the capitalist countries occurring in 1982 as a result of the imposition of sanctions, with a negligible improvement in the growth rate of exports, was only partially reflected in the study presented, which was performed in the course of last year.

In the refinancing alternative (we arbitrarily used this abbreviated term) we adopted the arbitrary assumption that in spite of the limited availability of credit, payment obligations resulting from credit installments together with interest would be refinanced each year (until 1990) with new credit. This assumption, which was adopted for analytical purposes, allowed us to single out the consequences and dangers resulting from negotiating multiyear moratoriums on debt repayment, or ones "carrying over" from year to year. (Our research concentrates on analysis of the long-term macroeconomic consequences of the debt repayment concepts presented, without taking into account the various techniques of financial operations associated with them.) It allowed us to isolate the main barriers to initiating the process of reducing the extent of the economy's indebtedness.

Formulating assumptions concerning the formation of the volume of imports and the factors in its effectiveness, we recognize as relevant the unjustified anticipation of future changes in the factor of the import-intensiveness of production (or in its opposite, i.e. the factor of the effectiveness of imports) on the basis of trends or similar analytical methods. We thus formed the hypothesis that during the introduction of the economic reform, one might expect a shifting of the economy in the direction of a considerable limitation on its dependence on imports, by means of an adaptation of the import-intensiveness of production to export capacity.

In determining the probable future formation of the factor of the effectiveness of imports, we made use of the following understanding:

In the MODO model, overall production is a function of the total imports from the socialist countries and the capitalist countries, and their effectiveness. We assumed that the effectiveness of imports (measured in overall production) is determined by the volume of imports and by the structure of their uses. Thus, the basic determining factors are: 1) the amount of import capacity of the CEMA countries to our market; 2) the amount of imports from the capitalist countries, determined both by the ceiling of our economy's export capacity and by exogenous noneconomic factors; and 3) the ability to substitute for imports from both payment areas.

The last of the above-mentioned factors, i.e. substitution among imports from the socialist countries and capitalist countries, encounters certain ceilings in both the short term and the long term. In the short term, the effectiveness of imports is determined by the level of imports from the capitalist countries, a growth of which in comparison with the presently low ceiling can occur only through higher growth rates in production and export. Somewhat higher production can be achieved by increased imports from the socialist countries; nevertheless, its extent will be closely determined by the scope of the substitution of imports from the socialist countries and capitalist countries.

In the short term, the possibilities for this substitution will be very limited, since it is not being accompanied, on one hand, by the necessary structural transformations in the production apparatus, or on the other hand, by significant support from the regulatory system, since the economic reform is only in the initial phase of being instituted. In the long term, one may expect a slow expansion of the scope of the substitution of imports between the two payment areas, as a result of the restructuring of the economy through investment (a revival of the investment process) and of the influence of the mechanisms of the reform. The higher growth in production achieved in this manner may result in shifting the barrier of imports from the capitalist countries, and in turn raise the ceiling of import substitution. The possibilities for setting this linkage in motion, however, should be assessed with great care, taking into account, on one hand, the high costs of shifting the economy, and on the other, the extent of its indebtedness.

The processes brought about by the linkage described may furthermore also affect the supply barrier in imports from the socialist countries. Therefore, in the long term the possibilities for moving the existing barriers upward and expanding "import capacity" can be associated primarily with the mechanisms of the economic reform and a general improvement in the economic efficiency.

On the basis of the solutions to date, two conclusions are suggested: a) in the current decade, under the conditions of sharp credit and import limitations from the capitalist countries, the volume of imports will be closely determined by the level of autonomous export capacity (i.e. without an external credit supply); b) the expectation of a significant increase in the substitution of imports between the two payment areas appears to be unjustified in view of the occurrence of a structural barrier (internal) and a supply barrier (external).

We therefore adopted the assumption that in the period under investigation there would be only a slight increase in the volume of imports from the capitalist countries, from \$4.6 billion in 1982 to \$6.4 billion in 1990, and a stabilization of imports from the socialist countries. We assumed a balancing of turnover with the socialist countries over a 10-year period. At the same time, we assumed that before 1984 there would not be any improvement in the effectiveness of imports, and that after that the improvement would be small. This hypothesis is based on the expectation that actions will be undertaken in the short term to restructure imports, in order to search for the most effective uses for them.

As it appears from the diagram, during the so-called adjustment period a process of limited import shifting will begin, in the search for the uses of imports that have the highest effectiveness from the point of view of the most urgent social needs and cost-effectiveness. In this period of adjustment, the maximum effectiveness of imports will increase. This, however, does not necessarily mean that it will be accompanied by a simultaneous increase in production throughout the entire national economy. In the next phase, i.e. the concentration of imports on the most efficient uses, one may expect that the maximum efficiency of imports will still show a tendency to increase, with a simultaneous increase in production.

On the basis of the above understanding, we adopted the assumption that a result of concentrating imports on the most efficient uses will be a curbing of the decline in production in the short term. This means assuming a stabilization in import efficiency in the short term. The assumptions concerning the materials-intensiveness of production are expressed with the aid of the factor of RDP [expansion unknown], anticipating its stabilization before 1985. In the succeeding years until 1990 there is a slow decline in materials-intensiveness, mainly as a result of the influence of the regulatory mechanisms of the economic reform. In the base alternative it was assumed that the basic goal of economic policy in the decade studied is to achieve a significant export growth rate in a short period, while simultaneously curbing the tendency of consumption to decline and ensuring a continuing even if slight increase in its volume by 1984.

With these governing conditions, the growth rate of consumption becomes extremely "sensitive" to every change, even if slight, in the national income structure in favor of investment. Thus, in the base scenario, it was provided that investment's share in the national income would be stabilized until 1985 at a very low level (9 percent), after which there would only be an insignificant increase in it to 13 percent in 1990. At the same time, it was assumed, however, that the level of the index of investment efficiency (WEFI) would also be subject to an slight improvement from 1983 to the end of the decade, as a result of the mechanisms of the economic reform, which will make a somewhat higher growth rate in industrial production possible.

Guided by similar premises, we also adopted the assumption that from 1983 to the end of the period there will be a continuing improvement in the factor of export capacity (WZE). The detailed results of the study of the base alternative are contained in the table.

On the basis of these results from the alternative studied, it is possible to designate their scenario for the macroeconomic ratios until 1990 with the name of the cautionary prediction. The consequences of the assumption adopted in this alternative regarding the negotiation of credit for refinancing annual (or semiannual) liabilities resulting from the servicing of foreign debt are of a dual nature. Among the advantages of this alternative, one may count the achievement of a certain increase in the growth rate of exports, while simultaneously curbing the tendency of consumption to decline and even ensuring a continuing slight growth in it during the second half of the decade.

At the same time, however, this scenario contains two serious dangers to the possibility of emerging from the crisis and stabilizing the economy in the long term. The first of them is extending the time frame for the economy to operate at a loss past the year 2000, with a continually increasing burden of servicing foreign debt. The second is the danger of a depreciation of production assets on a previously unknown scale. With the adoption of the hypothesis of debt refinancing, the extent to which the balance of payments is burdened with credit payments along with interest will grow sharply, reaching the level of 330.6 percent in 1990. It is worthwhile to recall that in economic practice the permissible level of this index is considered to be 25 percent.

The hopes that are usually associated with moratoriums on paying credit installments do not appear to be justified, since they would not bring about a fundamental improvement in the country's payment situation. As is apparent from the earlier considerations, during the period of recovery one cannot expect a significant increase in the growth rate of production and a fundamental rebuilding of the economy's export capacity allowing repayment of the accumulated credit burden after the period of the moratorium. A moratorium, without resolving the problem of the growing spiral of indebtedness, only temporarily postpones the need to deal with it.

The alternative of refinancing each year's payment obligations also contains assumptions that the growth rate of investment processes will be maintained at a very low level until the end of the current decade as a result of the great "sensitivity" of consumption. This prevents both ensuring the necessary tempo for restoring productive assets and shifting them and taking essential structural development measures in the long term.

Thus, the hypothetical path of debt refinancing could mean:

--on one hand, an intensifying spiral of indebtedness, reaching "unimaginable" dimensions, which the economy's export capacity could not cope with for a period considerably exceeding the time frame of the current decade;

--on the other, the danger of a depreciation of productive assets.

In view of the still hypothetical nature of the assumption of a "creeping" refinancing of each year's credit obligations, and the dangers entailed by such a scenario in the prediction, we felt that the base alternative only has value as a warning, and for insight and information, and can constitute a basis for further research.

In continuing the search for future scenarios for macroeconomic ratios determining the conditions that are however necessary for initiating the process of reducing the extent of the economy's indebtedness in a timeframe that can be determined, we investigated another alternative version of our prediction, arbitrarily called the "alternative of reducing indebtedness."

FOOTNOTES

1. Z. Sadowski, J. Kotowicz, K. Cwalina: "An Experimental Model of the General Ratios for the Growth of the National Economy," MODO GOSPODARKA PLANOWA [Planning Economy] No 9/1979, and Z. Sadowski, J. Kotowicz, A. Szeworski: "An Alternative Prediction of the Basic Economic Ratios of Poland Until 1990," GOSPODARKA PLANOWA No 10/1981.

[Article by Joanna Kotowicz, Zdzislaw Sadowski, and Andrzej Szeworski: "Alternative of Reducing Indebtedness"]

[Text] The analysis of the alternative of debt refinancing indicated the lack of real prospects for a possibility of curbing the spiral of indebtedness at the level it has presently reached, the interest rate in effect, and the level of our economy's efficiency¹. In this situation we acknowledged that searches for political and economic alternatives leading in effect to a reduction of indebtedness should be based on arbitrary determinations concerning the procedure for the increase and repayment of debt. This conclusion was the point of departure of the alternative presented. For analytical purposes, we distinguished between two periods in it: the "period of reconstruction" and the "period of curbing the increase in indebtedness."

In the period of reconstruction, we adopted the arbitrary assumption of a suspension of debt repayment (credit payments and interest). Hoping for the initiation of recovery processes--in an economy freed from the burden of debt servicing--we assumed that debt repayment would be resumed at the moment when this would not be a threat to the growth rate achieved in the national income and in consumption. This moment begins the "period of curbing the growth of indebtedness." At the same time, we assumed that from the first year of the suspension of debt repayment, i.e. 1982, the debt would increase at a constant, arbitrarily fixed percentage.

Nevertheless, if the philosophy of creating an alternative for macroeconomic ratios during the period of reconstruction (analogous to the philosophy presented under the alternative of debt refinancing) led from analysis of the possibility of increasing economic efficiency to the presentation of similar macroeconomic ratios for growth, then the methodical approach to the alternative during the period of curbing indebtedness was in a certain sense a return to this philosophy. Three reasons contributed to these changes:

In the first place, as we have already indicated, in the perspective of the next decade, the limiting conditions leave a very narrow field of choice of a scenario for the formation of the model's exogenous variables. We consequently did not find any reasons for a general modification of the understanding of the anticipated changes in efficiency that were presented in the base alternative. We only made modifications resulting from the adoption of the arbitrary assumptions concerning debt repayment.

In the second place, in view of both the arbitrariness of the quantification of the assumptions adopted concerning improvements in the efficiency of management in the period until 1990, and also in view of the shortcomings and imperfections in every technique for predicting the factors in efficiency during this period, these problems appeared even more acute in the timeframe until the year 2000, and thus during the period of curbing the increase in indebtedness.

In the third place, in spite of the limitations presented previously, our task is nevertheless to formulate a positive alternative, and thus to present a hypothetical path to getting the economy out of debt, and the conditions required to implement this.

A result of the prerequisite of creating an alternative for the macroeconomic ratios during the period of curbing the increase in indebtedness was the search for the scale of the increase in economic efficiency required to initiate the process of a decline in indebtedness. This scale of the necessary improvement in efficiency can be treated as a challenge to the system of the economy's operation and to economic policy.

Period of Reconstruction

In order to determine the length of the period of reconstruction and the level of debt interest that would provide a realistic possibility of getting out of debt at all, we investigated the consequences of an arbitrarily established procedure for debt repayment and accumulation.

For this preliminary research, we took the timeframe until 1990, making the appropriate modifications in the assumptions presented in the refinancing alternative. In addition to the change in the manner of debt repayment and accumulation, the following assumptions of the refinancing alternative were changed:

1. Temporarily, beginning with 1982, we assumed a reduction in the factor of import efficiency (RPI). This will be a result of the relative increase in price of imports from the capitalist countries as a political and economic consequence of the suspension of the repayment of payments and interest on credits, and the necessity of using the services of intermediaries, etc. We assumed a damping effect of this factor on the RPI level in the time-frame studied.
2. We assumed a relative reduction in the factor of export capacity (WZE) as a result of the anticipated temporary deterioration in the conditions for marketing exports in the capitalist countries. Similarly, as in the previous case, we assumed a damping effect from this factor.
3. One consequence of the suspension of debt servicing payments is a balancing of the balance of trade and the balance of payments with the capitalist countries, and thus a rejection of the assumption of a restrictive imports policy. As a result, in the alternative studied, only the amount of exports determines the size of the import supply that can be obtained from the capitalist countries. This was reflected in a change in the logic of the model: imports from the capitalist countries, which were a determining variable before 1982, became endogenous by making them dependent upon the amount of exports to the capitalist countries.
4. We adopted two alternatives for the amount of interest on debt: at the level of 15 percent, and thus at the amount of the interest rate that applied to credits issued to Poland in 1982, and for comparison, at a lower level, 10 percent. The remaining assumptions were unchanged.

As a result, it turned out that the assumption of a complete suspension of debt servicing payments in the period being examined would bring about a positive feedback in the economy between export performance and the size of the import supply. In this manner an increase in the growth rate of imports--the main limitation on increasing production in the debt refinancing alternative--will bring about multiplier processes in the economy. This allows not only compensating for the losses resulting from the temporary decline in import efficiency and the reduction in the factor of export capacity, but also contributes a very marked improvement in the growth rate of the national income and consumption, especially toward the end of the period studied. (The growth rate of the national income from 1982 to 1990 was at the following levels: 7 percent, 2.5 percent, 4.5 percent, 4.5 percent, 4 percent, 4.5 percent, 5.5 percent, 5.5 percent, and 5 percent, while the growth rate of consumption for these years was 9.5 percent, 0 percent, 2 percent, 2 percent, 1.2 percent, 3 percent, 4.5 percent, 4.5 percent and 5 percent.)

At this point a comment is necessary. This marked improvement in economic efficiency is achieved in the model only by taking into account the feedback between the volume of exports and the supply of imports from the capitalist countries, and industrial production. In order to be consistent with the previous considerations concerning the barriers to import efficiency, we should still consider in addition the further feedback between the increase in the volume of imports and the increase in their efficiency. This would lead to a more pronounced improvement in the growth rate of the national income and consumption. It is likely, however, that we were fairly optimistic in quantifying the improvement in the import-intensiveness of production in the debt refinancing alternative. If this hypothesis is correct, then the advisability of adopting the strategy presented in it becomes even more doubtful.

The marked symptoms of an improvement in the economic situation toward the end of the decade that we observed in the alternative of lowering the degree of indebtedness inclined us to take the year 1987 as the final year of the "reconstruction period." In that year, consumption will reach the level of 1980, and we thus recognized as possible a renewal of debt payments with a simultaneous retention of the growth rate of consumption from the preceding period.

In the period studied, with interest accumulating at the rate of 15 percent per year, the debt would reach \$60 billion in 1988, and \$160 billion in 1995, while at an interest rate of 10 percent it would reach \$44 billion in 1988 and \$85.5 billion in 1995. In this situation, we noted that adoption of the first alternative for the interest rate would no longer provide a realistic possibility of curbing debt accumulation in the future, and consequently adopted the second alternative.

Period of Curbing the Increase in Indebtedness

We adopted the assumption that beginning in 1988 annual debt payments would be expressed exogenously with the aid of the WOBSL [debt servicing percentage] factor, which is the ratio of these payments to exports to the capitalist countries. In this manner the distribution of export receipts from the second payment area for imports and debt servicing became an important determining

variable in the model. We next assumed that in the period studied (1988-2000) foreign credits would not be obtained, while indebtedness, as during the previous period of reconstruction, would increase at an annual rate of 10 percent of the level of debt at the beginning of a given year.

The possibilities of choosing an economic strategy during the period of curbing the increase of indebtedness are determined to a significant degree by the consequences of the policy carried out during the reconstruction period. Its primary purpose was to increase the growth rate of production and to achieve the precrisis level of national income and consumption. As we already mentioned, a consequence of this was the need to conduct a restrictive investment policy, in view of the high "sensitivity" of the growth rate of consumption to the distribution of the national income, which was reflected in the very low share of net investment in the national income in the course of the years 1980-1988.

At the same time, with a drastic limitation on investment imports from the capitalist countries, and thus on the acquisition of modern technology, one must assume that restoration of these assets was characterized by a declining maximum efficiency. As a result of the process of the aging of assets, it is difficult to expect a further significant improvement after 1988 in the indices for the efficiency of the utilization of imports and the materials-intensiveness of production, with a further continuation of restrictive investment policies, since the aging assets will create a barrier to further improvement in them. It therefore appears that a more dynamic investment policy is a condition for improving or even maintaining economic efficiency at the previous level. It will encounter obstacles, however.

As soon as the precrisis level of production is reached, economic policy will be faced with two alternatives: the first will be maximizing production, which in view of the existing limitations, however, will only take the form of preserving the growth rate achieved in consumption; and the second, which appears paramount, will be curbing indebtedness in the time-frame until 2000.

In the first year of the period examined, the debt will be \$42 billion, and the annual increase in it due to interest will be \$4.2 billion. The economy is faced with the task of obtaining in a few years a continually increasing pronounced surplus in foreign trade with the second payment area. At first this will lead to a slackening of the rate of the increase in the debt, but after it is curbed the requirements for increasing the surplus may be rejected in favor of guaranteeing it a constant level sufficient to ensure a decline in the size of the debt. This will entail the necessity of reducing the growth rate of the national income for distribution throughout the entire period studied, and thus of limiting the possibility of a considerable improvement in consumption and capital formation. At the same time, it will be necessary to conduct a restrictive import policy, but one in which the growth rate of imports will guarantee maintaining the growth rate of imports and of the national income produced, ensuring the realization of social goals and a very pronounced improvement in the export growth rate.

To sum up, during the period of curbing the increase in indebtedness, economic policy will be faced with the following "trade-offs":

1. Beginning to make investment processes more dynamic and modernizing productive assets, at the cost of a temporary pronounced reduction in the level of consumption and a postponement of the moment when the growth of indebtedness is curbed, which will probably become unattainable.

2. Increasing the rate of debt payments, which will contribute to a significant curbing of the increase in debt in a short period, at the cost of investment and import restrictions, and consequently a halt to the acquisition of new technology, a deterioration in assets, and economic stagnation in the long term.

The conclusion that suggests itself is that a practical political and economic solution should be sought in a combination of a policy of increased investments and an acceleration of debt repayment, while preserving the level of social consumption. The effectiveness and thus the feasibility of such an alternative for economic policy nevertheless depends on whether the basic condition is met--increasing the economy's export capacity. In the model, this dependence is covered by the relationship of exports to the second payment area to industrial production, and is determined by external and internal factors. Among the essential internal governing conditions for an improvement in this ratio are a good economic situation and an increase in the growth rate of world trade.

In order to make it possible to present the path of reducing indebtedness, it was necessary to adopt an arbitrary assumption that the above-mentioned external governing conditions for the factor of export capacity would be favorable. The external factors governing an improvement in export capacity are an increase in the competitiveness and quality of our export products, and the creation of mechanisms for profitable trade. In the alternative presented for the formation of macroeconomic ratios in the years 1988-2000, the essential condition for the process of reducing debt while ensuring the realization of the other economic goals mentioned is achieving an almost twofold improvement in the economy's export capacity. The extent of the improvement required is the chief challenge to economic policy and the the system of the economy's operation.

As a result, in the scenario for the formation of macroeconomic ratios during the period of curbing indebtedness, we are assuming that the level of the growth rate of consumption will not fall below 2 percent a year, in some years reaching 4 percent, and that a pronounced improvement in it will only occur toward the end of the century. We are assuming that during the entirety of the period examined, the growth of exports to the capitalist countries will be on the average twice as high as the growth rate of industrial production, and considerably higher in the years 1993-1997. This is expressed in the adoption of the assumption of an 80 percent improvement in the factor of export capacity (WZE), measured by the ratio of exports to the capitalist countries to export production, in the years 1988-2000.

We are also assuming that in 1988-1991 the share of export earnings set aside for repaying debts in exports to the capitalist countries will gradually increase, reaching a level of 10 percent; and that subsequently the rate of the increase in this share will increase in such a way that in 2000 it will reach a level of about 40 percent. In the initial years of the period of curbing indebtedness, this will be associated with a need to maintain the growth rate of imports from the capitalist countries at a level ensuring stabilization of the rate of increase. In the area of trade turnover with the socialist countries, we adopted the assumption of a stabilization of this turnover with a slight tendency to increase or to become balanced during the timeframe of the study. In connection with this, in the initial years of the period studied we

assumed a positive balance in turnover, balancing out the amounts due as a result of the negative balance in preceding years.

The distribution presented for the export earnings from the capitalist countries will not be sufficient, however, to ensure the necessary growth rate in production and the national income. In order to achieve it we assumed that it is necessary for the most intensive improvement in the factors of imports and the materials-intensiveness of production to occur in the first 3 years of the 1988-2000 period. Beginning in 1992, the rate of the increase in imports will guarantee that the growth of imports will be maintained at a level ensuring realization of the goals of economic policy, so that from the entire 6.7 percent increase assumed in the efficiency of imports (RPI), measured by the ratio of overall production to imports, only about 3 percent will come about in the years 1990-2000. The same thing will happen with the decline in materials-intensiveness, measured by the ratio of the national income to overall production, which should improve by 3.4 percent for the whole of the period studied.

In connection with the initial relatively large burden on the national income represented by debt servicing, we assumed a constant share of net investment at the level of 11 percent in the years 1988-1989, to be increased to 14 percent by 1992 at the rate of 1 percent per year. We assumed that this is the maximum possible supply of productive assets to the economy, from the point of view of the growth rate of consumption in the period examined. We further assumed a stabilization of the share of net investment in the national income until 1995, and only beginning with the following year an annual increase of 1 percent. At the same time we assumed an initial stabilization, and toward the end of the decade a marked improvement, in the factor of investment efficiency. This results from the need to limit investment imports, and thus the acquisition of modern technology for almost the entire 20-year period. It can occur on a greater scale only in the final years of the decade of the 1990's. We adopted such an assumption in the model.

Adoption of the above assumptions allows maintaining a stable increase in industrial production at a level of about 3-4.6 percent annually, with the exception of markedly better results in the final years of the time-frame of the study. Assuming the previously considered increase in the economy's export capacity, the growth rate of exports to the capitalist countries will not only considerably exceed the growth rate of industrial production, but they will grow at a rate faster than 10 percent annually beginning in 1992. As a result of the assumptions adopted above, debt servicing, and thus the balance in trade with the capitalist countries, will reach the level of the annual accumulation of interest in 1996. That is the moment when the process of increase in the debt will be halted; it will reach the level of \$61.2 billion, and starting with the following year, its size will decrease.

In the model, we make use of constant 1981 prices. It should be pointed out, however, that taking into account the increase in prices in foreign trade would improve the model's results, bringing closer in time the moment when the debt stops growing, as long as this effect is not leveled out by an unfavorable change in the terms of trade. In assuming the invariability or improvement of the terms of trade, the real amount of the surplus in foreign trade with the

second payment area (debt servicing) calculated in current prices is higher than the surplus calculated in constant prices.

It should be emphasized again that the path presented for diminishing the extent of the economy's indebtedness would require both the fulfillment of arbitrarily adopted assumptions, and also favorable internal and external governing conditions.

Final Considerations

On the basis of the considerations presented above for the macroeconomic ratios until the year 2000, the following observations are suggested:

1. Under the conditions of sharp restrictions on imports from the capitalist countries, the limited availability of credit, and the decline in the economy's export capacity (caused by endogenous and exogenous factors), the range of choices for hypothetical scenarios for economic strategies directed toward diminishing the extent of indebtedness is extremely limited.
2. Particular caution is required in analyzing and reaching conclusions concerning the consequences of the adoption, in the first of the alternatives studied, of the principle of refinancing each year's debt-related liabilities ("creeping" moratoriums on payments of credit liabilities).
3. Hypothetical adoption of the above strategy means: a) achieving a certain increase in the growth rate of exports, a curbing of the tendency of consumption to decline, and even a constant slight increase in it in the second half of the decade; b) an intensification of the spiral of indebtedness through a sudden increase in the burden on the balance of payments from servicing foreign debt (in 1990, 330.6 percent); c) a suppression until the end of the decade of investment processes, in view of the high "sensitivity" of consumption to changes in them. This means a suspension of the replacement of fixed assets and the inevitability of their partial depreciation.
4. We therefore describe the alternative of refinancing debt as a path to be avoided.
5. The basic goal of the second scenario analyzed, i.e. the alternative of reducing the extent of indebtedness, was an attempt to characterize the governing conditions (internal and external) that are essential for initiation in the foreseeable future of a process of reducing the burden on the balance of payments from debt servicing (getting the economy out of debt).
6. The above-mentioned conditions can be summarized as follows: a) continuing and consistent implementation of the process of reforming the system of the economy's operation, and ensuring a considerable improvement in economic efficiency in the long term; and b) considering the concept of debt payments presented based on a temporary suspension of payment, with a simultaneous calculation of interest at a constant and arbitrarily adopted percentage rate.

In the years 1982-87 (the period of reconstruction):

c) A suspension of payment on credit liabilities for a period that would make possible a certain increase in the growth rate of economic processes and the achievement of the level of consumption of the late 1970's.

d) Bringing about a feedback between the economy's increased import capacity resulting from the suspension of credit payments, and the increase in the growth rate of production and exports.

In the years 1988-2000 (the period of curbing the increase in indebtedness):

e) Beginning in 1988, ensuring a slow but constant increase in consumption, and beginning to pay credit liabilities. These payments will increase from year to year as the economy's export capacity improves, guaranteeing simultaneously a corresponding level of supply imports.

f) A "moderate" revival of investment processes, making possible a continuation of credit payments; ensuring the assumed growth rate of consumption and a slow restructuring of the economy; and a limitation of the extent and scope of specialized deteriorated capital.

g) A sudden and permanent increase in export capacity, determined by favorable internal and external governing conditions, such as:

--a long-term improvement in the economic situation and the growth rate of world trade (absorptiveness of the external market);

--a weakening of protectionist barriers and other institutional obstacles in trade turnover with the capitalist countries;

--an improvement in quality and an increase in the competitiveness of export products, and the operation of mechanisms to promote profitable exports, as a result of the effect of the instruments of the economic reform.

Fulfillment of the above conditions would lead to initiation of a process of a reduction in the extent of the country's indebtedness beginning in 1996. The predictive research presented was aimed primarily at attempting to identify these governing conditions. On the basis of the analysis presented, a question may arise as to whether the conclusions and results formulated in the study could not have been reached by means of simpler analytical methods (based on intuition) without using the technique of mathematical modeling.

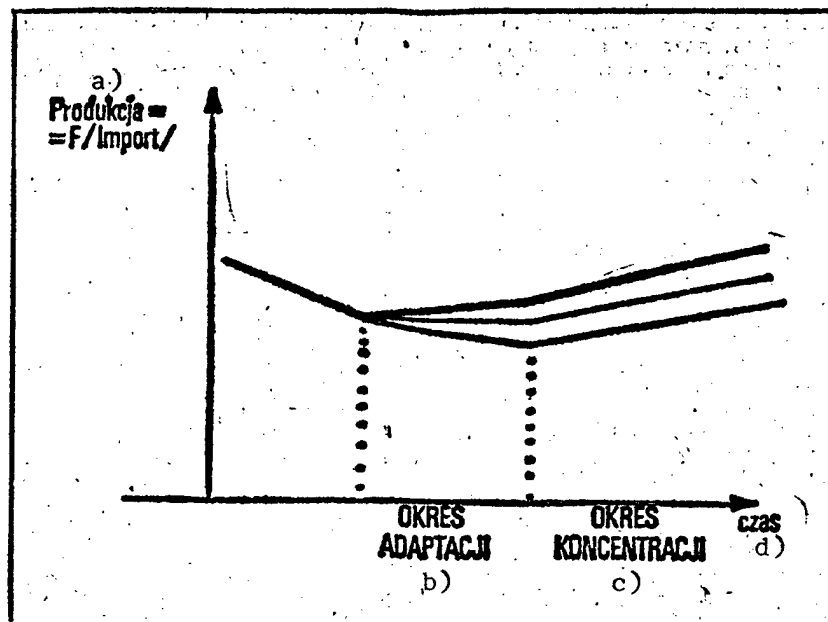
In our opinion, predictive research conducted with the aid of a simulation model was superior to an abstract analysis, since it allowed:

--making a quantitative description of the formation of the basic outlines of development over a long period;

--describing the distribution in time of the changes in these macroeconomic ratios and the extent of the basic limitation on the entire economic system;

--a detailed description of the mutual interrelationships and feedbacks among the basic economic dimensions.

For these reasons, we considered it advisable and useful to use the model described for predictive research.



Key:

- a) Production = F/imports
- b) period of adjustment
- c) period of concentration
- d) time

a) CHARAKTERYSTYKA LICZBOWA WARIANTU REFINANSOWANIA DŁUGU (w mld zł, ceny 1981)

b) Wynagrodzenie

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Dochód narodowy wytworzony (DNW) c)	217,5	227,5	164,1	160,6	175,8	181,7	181,3	185,4	203,8	212,3	222,7
stopa wzrostu (SNDW) d)	-4,5	-14	-12,1	1	5,5	3,6	2,6	4,0	4,3	4,8	4,9
Dochód narodowy podziałowy (DNP) e)	222,9	232,9	167,3	163,6	178,7	1740,3	1733,2	1834,4	1908,7	1985,4	2080,3
stopa wzrostu f)	.	-19,9	-19,9	-1,8	4,97	2,19	2,5	2,9	4,06	4,08	4,78
Konsumpcja (KONS) g)	190,7	194,4	167,7	167,9	184,3	1840,3	1851,4	1856,7	1832,0	1877,7	1737,1
stopa procentowa h)	.	-2,4	-15,9	-2,04	3,24	1,01	0,7	2,28	2,85	3,8	3,54
Inwestycje netto (INET) i)	284,4	284,1	148,3	144,0	125,3	136,8	149,4	183,4	180,96	238,25	270,45
stopa wzrostu j)	.	-41,3	-84,3	-1,6	5,9	2,2	8,2	6,3	14,5	13,5	13,5
Ekspertyza krajów kapitalistycznych (EKSPK) k)	1,04	5,3	5,5	5,6	5,9	6,3	6,3	6,8	7,2	7,6	8,2
stopa wzrostu l)	.	-2,3	-3,9	2,1	5,6	5,3	4,1	4,6	6,3	5,6	7,7
Import z krajów kapitalistycznych (IMPZ) m)	2,3	4,3	4,6	4,6	5,9	5,3	5,4	5,6	5,8	6,0	6,4
stopa wzrostu n)	.	-87	-85	-1,1	8,7	2,4	2,9	3,9	3,9	3,5	6,2
Wielkość długu (DŁUG) o)	20,3	22,99	24,3	24,0	30,9	24,4	25,3	42,8	45,1	54,0	60,8
Rośnie oprocentowanie (OP) p)	1,73	2,6	2,76	4,15	4,97	5,19	5,37	6,67	7,8	8,06	8,9
Obługa długu (opłata rat i odsetek) (OBSL) q)	7,3	8,3	10,37	12,36	13,54	15,06	16,3	19,9	21,3	24,1	27,3
WOBSL = $\frac{OBSL}{EKSPK} \cdot 100$ proc. r)	98	104	100	117	100	141	109	178	104	114	129

* 1 dol. USA = ceny bieżące

Key:

- a) Quantitative Description of the Alternative of Refinancing Debt (in billions of zlotys, 1981 prices)
- b) category
- c) national income created (DNW)
- d) growth rate (SNDW)
- e) national income distributed (DNP)
- f) growth rate
- g) consumption (KONS)
- h) percentage rate
- i) net investment (INET)
- j) growth rate
- k) exports to the capitalist countries (EKSPK*)
- l) growth rate
- m) imports from the capitalist countries (IMPZ)
- n) growth rate
- o) amount of debt (DŁUG*)
- p) annual interest rate (OP*)
- q) debt servicing (installment payments and interest) (OBSL*)
- r) WOBSL = OBSL/EKSPK * 100%

* U.S.\$ - current prices

a) Charakterystyka liczbowa hipotetycznego
wariantu obniżania stopnia zadłużenia (w mld zł, ceny 1981 r.)

Kategorie b)		Okres odbudowy c)					
		1982	1983	1984	1985	1986	1987
e)	Dochód narodowy						
	wytworzony (DNW)	1738,9	1784,8	1885,1	1985,1	2072,8	2076,6
f)	stopa wzrostu	-7,8	2,42	5,6	5,3	4,4	5,0
g)	Dochód narodowy						
	podzielony (DNP)	1763,8	1789,9	1873,9	1953,5	2020,6	2104,1
h)	stopa wzrostu	-10,1	1,5	4,7	4,3	3,4	4,1
i)	Konsumpcja (KONS)	1613,7	1628,8	1677,1	1728,8	1757,9	1820,0
j)	stopa wzrostu	-10,1	1,0	2,9	3,1	1,7	3,5
k)	Inwestycje netto (INET)	158,7	161,1	168,7	175,8	181,9	210,4
l)	stopa wzrostu	-19,1	1,4	4,7	4,2	8,2	9,0
	Eksport do krajów						
	kapitalistycznych (EKSPK*)	5,47	5,8	6,25	6,71	7,06	7,47
m)	stopa wzrostu	-5,9	6,0	7,7	7,4	8,2	8,7
n)	Import z krajów						
	kapitalistycznych (IMPK*)	5,47	5,8	6,25	6,71	7,06	7,47
o)	stopa wzrostu	-11,7	6,0	7,7	7,4	8,2	8,7
p)	Wielkość długu (DLUG*)	24,8	27,3	30,1	33,1	36,4	40,1
q)	Roczne oproc. (OP*)	2,49	2,73	3,01	3,31	3,64	4,04
r)	Obsługa długu (słata						
s)	rat i odsetek) (OBSL*)	0	0	0	0	0	0
	(WOBSL) (w proc.)	0	0	0	0	0	0

*) dol. USA, ceny bieżące

d) Okres zahamowania wzrostu zadłużenia

1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
2281,7	2368,1	2446,3	2561,2	2686,2	2813,3	2929,5	3023,5	3184,2	3322,0	3500,2	3782,2	4080,1
4,8	3,8	3,3	4,7	4,9	4,7	4,13	3,01	5,31	4,5	8,21	8,06	7,88
2207,7	2278,5	2348,3	2449,8	2570,0	2686,0	2773,2	2832,9	2948,2	3037,6	3155,4	3398,1	3637,0
4,8	3,4	3,1	4,3	4,9	4,5	3,3	2,2	4,0	3,0	3,9	7,7	7,0
1883,1	1948,1	1984,3	2045,3	2120,3	2216,1	2287,9	2338,8	2402,8	2445,3	2524,4	2732,6	2935,8
3,5	3,4	1,9	3,1	3,7	4,5	3,3	2,2	2,7	1,8	3,2	8,3	7,4
242,3	260,6	281,8	318,5	359,8	376,0	388,3	396,9	442,2	486,0	520,5	546,6	573,9
15,2	3,4	12,5	13,0	13,0	4,2	3,3	2,2	11,4	9,9	7,1	5,0	8,0
7,97	8,38	8,98	9,54	10,49	11,35	13,01	14,43	16,27	18,09	20,18	22,65	25,70
6,7	5,2	6,7	6,7	9,9	10,2	12,5	11,0	12,6	10,3	10,5	12,2	13,4
7,81	7,9	8,32	8,59	8,7	9,01	9,76	10,4	11,06	11,58	12,31	13,82	15,42
4,5	2,0	4,3	3,3	1,3	3,3	8,3	6,8	6,4	4,7	6,3	12,2	11,6
42,7	43,3	48,0	50,6	53,4	56,2	58,6	60,4	61,2	60,9	59,1	56,1	51,3
4,26	4,52	4,9	5,06	5,34	5,62	5,86	6,04	6,12	6,08	5,9	5,61	5,14
0,39	0,65	0,66	1,18	2,01	2,77	3,48	4,27	5,44	6,74	8,1	9,06	10,51
2	5	7	10	17	22	25	28	32	36	39	39	40

Key:

- | | |
|-----------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|
| a) Quantitative Description of the Hypothetical Alternative of Reducing the Extent of Indebtedness (in billions of zlotys, 1981 prices) | i) consumption (KONS) |
| b) category | j) growth rate |
| c) period of reconstruction | k) net investment (INET) |
| d) period of curbing the growth of indebtedness | l) exports to the capitalist countries (EKSPK*) |
| e) national income created (DNW) | m) growth rate |
| f) growth rate | n) imports from the capitalist countries (IMPK*) |
| g) national income distributed (DNP) | o) growth rate |
| h) growth rate | p) amount of debt (DLUG*) |
| | q) annual interest rate (OP*) |
| | r) debt servicing (installment payments and interest) (OBSL*) |
| | s) (WOBSL) (in percent) |

* U.S.\$, current prices

FOOTNOTES

1. We published the first part of the article under the title of "Wariant refinansowania" [Refinancing Alternative] in ZYCIE GOSPODARCZE No 32.

9909

CSO: 2600/1199

NEW FINANCIAL SYSTEM IN STATE FARMS DISCUSSED

Warsaw NOWE ROLNICTWO in Polish No 5, May 83 pp 26-28

[Article by Andrzej Bienkowski, Ph. D., Wieslaw Lyczek, Ph.D.,
Wlodzimierz Pulinski, Ph.D.: "Functioning of Instruments and Principles
of New Economic and Financial System in State Farms"]

[Text] The time that has passed since the implementation of the new economic and financial system in the state farms permits to make tentative evaluation and analysis of each instrument and principle of the new system. The information on topics that are of interest to us has been gathered through a guided interview. Interviewed were presidents, their assistants, chief accountants, and also some plant managers, as well as employees in charge of planning, investments or personnel matters in individual state farms. The guided interview's questions referred to eleven groups of problems: from those of the organizational structure of the enterprises under examination to the problems of planning, personnel policy, supplies and sales, settlement of accounts with the state budget, subsidies and credit, enterprise funds, investments, evaluation system, employment and profit, to the way of implementing the new economic and financial solutions. This will be also the order of our presentation of the conclusions and generalizations resulting from the analysis of the material gathered during the interview.

The examined state farms used to be a part of a trade federation which formally existed until the end of 1981. Afterwards, the federation entered the period of its liquidation, with works under way, at the same time, in order to establish an association of the state farms [PPGR]. The initiative to create it came during the federation's closing down meeting from the board of directors and leaders of the workers' self-management. At this point it is necessary to strongly emphasize that from the very beginning of the new organization's concept the individual enterprises were skeptical in judging the possibilities of the future association to solve their problems. The main question that arose at this stage of work concerned the statutes. The point was to work them out in such a way that they do not undermine in anything the farms' independence. The statutes that were worked out and adopted do meet this criterion in the opinion of the farms which, despite their reservations, joined voluntarily the association, as well as in the opinion

of their management. At present, the association's activities boil down, basically, to solving the following four groups of problems:

- full investment service,
- partially securing and distributing national resources,
- specialized counseling on production matters,
- coordination of farms' activities.

In the opinion of the surveyed farms, it is very difficult to answer the question how the association practically carries out the tasks it has assumed. Too short a time has passed since it was born, and besides, there are insufficient data to make objectively such an evaluation. Instead, another issue seems very interesting to me. Namely, one of the farms finds it socially and economically justified to include in the association other economic organizations such as the POM's [State Centers of Agricultural Machines] or Agricultural Building Enterprises [PBR]. Once, each state farms' complex used to have a strong mechanic's shop and a repair and building plant. In the years that followed these were liquidated and in their place POM's and PBR's were established which through their services continued to be linked with the state farms. Now, within the framework of the reforms, they gained full independence, therefore also a possibility to choose freely their partners. The state farms are and will be feeling their reluctance to render services to the agriculture, if nothing changes in this matter. With such an attitude of these companies, undertaking repairs, building or modernizing operations in the surveyed farms (one has to believe that this is a nationwide problem) must encounter many difficulties.

Our further analysis of this organization's structure deals with the internal changes brought about by the coming into force of the new solutions. In those farms where individual plants were free so far to make their own economic decisions, the decree has not introduced radical changes. On the other hand, where the plants' activities were limited, the introduced solutions opened to them new possibilities. The economic outcome of the work has become the most important thing. Before, the plants were not interested in cutting the costs of production because all crucial economic decisions were made behind their back. In the opinion of the management of the individual farms, one can see now a slow but steady growth of the workers' interest in these problems.

Another organization's structural issue regards the state farms' partners. We mean here, first of all, the problem of the state farms' subordination to regional administration, [and] their cooperation with agricultural-service units as well as with the financing bank. As for the first issue, opinions differ very clearly. The farms operating in industrial agglomerations estimate that their subordination to the regional administration had a negative impact on their operating conditions. An

agricultural enterprise is not a partner in bargaining with a city mayor, compared with an industrial plant. It's widely believed here that this has not been a fair move with regard to state farms. On the other hand, the city administration was also totally surprised by this decision. Before, there were no ties between the regional administration and agricultural enterprises. An opinion diametrically opposed on the same subject was expressed by the enterprises operating in typically agricultural provinces.

Their ties with the regional administration have been traditionally strong, and their present subordination had a positive impact on the operating conditions of the farms. This is reflected by the fact that their opinions count more and they have an easier access to scarce means of production. To sum it up, one can say that cooperation with the regional administration matches the position held by the agriculture in the structure of a given province. There is, on the other hand, an absolute consensus as to contacts with agricultural-service units. Beginning with the designations like a "ghastly cooperation," "unsatisfactory," "bad one," we get a whole range of negative qualifications. A part of this picture, i.e. the problem of machine centers and building companies, was presented before. As for the cooperation of agricultural enterprises and the banks, it is generally judged positive. It is commonly believed, however, that the latter are "powers" and not partners.

A second group of examined issues was the personnel policy conducted in each enterprise. The point was to answer the question whether it is at all possible to speak of such a policy in relation to the farms. The state farms experience a shortage of labor. To a high degree these difficulties are also true of the management personnel. Therefore, there is no objective basis for conducting a well-defined personnel policy.

It is generally believed that as long as the management does not obtain certain preferences in the financial sense, it will be difficult to speak of possibilities of shaping a rational personnel policy in the farms.

A third set of questions referred to problems of agricultural planning on the farms. So far, the federations used to transmit down to the dependent units binding indicators for their plan. They regarded mainly the wage funds and the structure of the crops and herd (often without taking into account the state of the livestock buildings or soil quality). During the year these were corrected, most often upwards. In this situation the margin of freedom of the enterprises was practically small. The reform makes important changes in this field. It is the individual plants, together with their banks, that work out the plans. Their activities are based today on the economic calculations. When including [specific] tasks in their economic plans, the farms assumed as their main criterion a precise estimate of their production capacity, from the point of view of the number of stalls in the livestock buildings, surface and structure (production of feed) of the owned land as well as supply possibilities. In establishing the plan the criteria of the

predicted profit as well as of the cost-price relations were taken into account. Previously, the enterprises were required by their federation to account for the imposed guiding indicators. Now, according to the decree, such a general evaluation has to be done once in 5 years. Only the bank monitors systematically financial activities of each plant. If the latter has any production troubles, it has to explain itself immediately. The regional administration is interested in the general analysis of the farms' economic activity, and the association [are interested] in the reserves of material and technical supplies.

Another group of problems under examination concerns supplies and sales. Although the allocation of the means of production falls partly under the regional administration and partly under the association, these quantities are not sufficient to conduct a normal business. Consequently, individual farms are compelled to seek sources of supplies on their own. At the same time, many businesses withdraw recently from providing supplies for the agriculture. Because of the shortages of commodities in the wholesale warehouses the orders are sometimes cut by as much as 80 percent. As a result, they are, in full consciousness, set higher, as it is clear that the headquarters will cut these amounts. Such a policy leads obviously to serious disturbances and disorder. As for the selling of the farms' produce, the decree has not brought about any important changes. The enterprises still have to go through the intermediary of the trade centers. It is a predominant opinion that this cooperation is based on "forced" conditions, i.e. very convenient for those centers. That is why the farms would be happy to have an opportunity to sell, at least a part of their production, on the free market, as well as to seek other forms of sales (e.g. firms' stores), which would go around the intermediaries. The problem of sales is connected with that of profitability. In the opinion of the surveyed enterprises, cultivation of crops is now more profitable than the livestock production. It is believed, however, that with the present state of finances and production it is difficult to classify specific products as definitely profitable or not. Decisive here are specific conditions on a given farm. Besides, the evaluation difficulties result from the high fluctuation of the prices (especially for supplies) as well as from the fact that some machines and equipment may be used for different kinds of production.

Problems of clearing accounts with the budget constituted the fifth set of problems under investigation. In the opinion of the farms, the reform has not brought about big changes in this domain. The ground's rent, set centrally, has been replaced with a property tax, assessed by the governors. At the same time, it is a common opinion that this assessment should be more differentiated, depending upon the quality of the soils.

Next issue examined in the guided interview were subsidies and credit. They point on the farms to the inappropriate allocation of subsidies for mixed protein feed. An enterprise gets a subsidy if it exceeds the standard costs (i.e. for an expensive production), and if it uses for

its production cheap components it does not get it. This situation, paradoxical from the economic point of view, does not improve obviously the efficiency nor cuts in the costs of production. Generally speaking, and this is the opinion of all the enterprises, the production subsidies should be completely abandoned. Subsidies mean a vicious circle. The point is to establish the relation between costs and prices in such a way as to assure profitability. Only then will it be possible to set in motion a consistent economic mechanism, stimulating improved efficiency. The subsidies, instead, always end up jeopardizing the principle of self-financing, economic self-management and economic calculus. As for the subsidizing of the nonproductive activities, the enterprises have no reservations.

The rules of financing now in force are strictly connected with the investment policy of the farms. The latter accept the conditions imposed by the bank, in the agreement stipulated are their obligations and not rights. Because of that, it is out of the question to speak of a partnership here. The present rules of financing the investments, in the opinion of those surveyed, give rise to certain difficulties in making those investments. The enterprises usually do not have enough of their own funds which causes cuts in investments. The Council of Minister's decree number 114 provided for financing the housing industry with budget subsidies. Other instructions (in force until today) stated that it would be financed with a given company's housing funds and subsidies (without establishing clearly their ratio).

At present, there are no company's housing funds, so the solution proposed in the decree was more advantageous for the enterprises. Besides, the farms have to account for the payments from their own funds up to 50 percent worth of their stock, which means that their independence is clearly limited, if, however, following the settlement of the results of the stock revaluation, the share of the statutory funds in the financing of the stock amounts to more than 50 percent worth of the revaluated stock, then this revaluation surplus is deposited to the centralized account of the department [of agriculture]. That is, in order to finance this surplus the enterprise has to obtain credit and to pay the interest. In the opinion of the enterprises, they should be entitled to draw on this fund up to 100 percent, the possibility of the bank's interference being then reduced. The regular control of the banks, conducted last fiscal year, referred to enterprises' activities in the sphere of the receipts management, financial management pertaining to the scheduled invoicing (on time), investments, excessive reserves, as well as the balance analysis.

The system of the company's funds was the next set of issues which were analyzed. It is believed in the enterprises that only in regard to the use of the welfare fund there are too many restrictions resulting from the regulations, while, after all, this decision is exclusively up to the employees who contribute to the fund. It is also believed that the reward fund, the way it is established, is too high, and it should total a maximum of 2 to 3 [monthly] salaries. Instead, the released money

should be used for monthly and quarterly bonuses, in order to stimulate the employees directly, day by day. Another comment regarded the investment funds. This problem returns as a boomerang during the analysis of various, apparently unconnected issues. One cannot speak of a rational management of these funds because there is too little allocated money. In the opinion of the surveyed enterprises, the appropriations should be redistributed within the department of Agriculture. There exist farms which in the past enjoyed priority investments thanks to grants and have now large funds. Most state farms, however, have big investment needs and are, at the same time, short of funds. The bank credit does not supplement them sufficiently because it is necessary to repay it. Comparing the actual credit with the output of the respective farms, it turns out that often they would not be able to pay it off.

Investments, the problem of which recurred many times when discussing other topics, constitute another set of issues which were verified. The decree has created a vicious circle: you can use your own funds for construction, but they are constantly lacking on the farms. The farms are usually repaying loans and interest which they used for previous investment projects. The projects which very often were and still are an "unwanted child" of the enterprises. Furthermore, for continued investments the interest rate was raised from 3 to 6 percent, without the possibility of remitting it. The surveyed farms estimate that as far as their rights to decide about the investments are concerned, practically not much has changed. The enterprises can make decisions pertaining to modernization or reproduction within the funds they have (and there is recently shortage of them) but it's their founding body (i.e. the governor's office) which exercises control over the development investments.

Another comment is about machines and equipment financing. The instructions on the investment credit provide for a 10 percent worth of the purchase financing. As the farms struggle with the shortages of funds necessary to make purchases, they should be rather allowed a credit up to the equivalent of the projected receipts in a given fiscal year, or up to the planned amortization. In the opinion of the farms, we should aim at shaping the investment system in such a way that the main contractor take care of all the matters having to do with preparing and execution of a given task. The enterprises would secure in such a case only the financial cover and a general supervision over the whole project.

In the new system, the fact that the suggestions referring to the development investments come from the farms is very positively judged. These are completely free to estimate whether a given investment is economically justified. In such a situation it is more difficult than before to force on them unwanted investments. The agricultural enterprises are critical about the execution itself of the investments. A listless and careless performance, as well as shortage of contractors, are not uncommon or rather are the everyday picture of the investment realities in the country.

Problems referring to the system of evaluating the enterprises constituted the next set of questions in our interview. The main changes in this field boil down to the fact that in the past the farms were appraised yearly, with reference to the execution of the obligatory tasks by the federation, while now the profit has become the main appraisal's criterion and the appraisal has to be made every 5 years. Within the enterprises a periodical economic evaluation is made, both of the quantity and the quality of the production, as well as of the financial performance, productivity and technological progress issues.

The employment and income funds of the farms constituted the last but one set of the issues under investigation. In the last fiscal year all enterprises were actually free to decide on their employment. There were no important changes in its level and structure. In one case workforce was reduced and it was necessary to retrain a part of the staff. These relatively small changes resulted partly from the functioning of the reforms themselves, and partly were caused by such phenomena as earlier retirement or cuts in production jobs.

As for the question: "How do the farms view the planned activities of the Fund for Professional Activation [FAZ]"? The opinion was definitely negative: the PFAZ should not operate in the state farms because there has never been too much labor there. Besides, there would be difficulties in using it because of the seasonal character of the employment on the state farms and big variability of the production's size.

In the last fiscal year there were no substantial changes in the system of salaries, bonuses and rewards in the surveyed enterprises. They were operating on the grounds of the group contract which left little room to manoeuvre. Pay increase is not, to this day, linked with the actual financial results. In one of the surveyed enterprises it is even believed that the pay in the agriculture has no impact on the economic affects. Formally, it is linked with the (profit) reward-fund but because the performance in the last fiscal year is not an objective indicator for the evaluation, one can hardly speak of any link here either. The bonus fund is a weak point of the motivation system. On state farms white-collar workers are paid according to monthly schedules, plus an executive supplement (for the management), while manual workers are paid for actually-worked hours, plus overtime and optional bonuses (up to 20 percent). On the other hand, the (profit) reward-fund percentage is the same for both groups. The changes in the motivation system proposed for the farms boil down to increasing the variable part of the pay up to as much as 40 percent of the pay fund. It would be payable during the year, according to the management's decisions, for specific production tasks. It is commonly felt that the part of the pay depending on the work should be dramatically increased in the whole pay. It has been too low until now, ranging from 30 to 45 percent.

The last problem under examination referred to the way of implementing the new system. The farms were partially prepared through a training, both before and after the reform became effective. The executory instructions came in November and December, and even in January 1982, which made the job far more difficult. A comparison of those instruments with the Council of Minister's decree 114 showed certain discrepancies and deviations. For example, in the chapter on the accounts clearing with the budget an obligation was introduced to transfer to the central budget (to the account of the department) the whole money coming from the revaluation of the property. It was not provided for in the decree. As for the question: "Which of the elements of the economic and financial system have been worked out incorrectly?", the issue of the motivation system was pointed to unanimously. It is commonly believed that at the stage of the preparation and implementation of the new system certain mistakes were also made. The department did not meet for example its obligations to provide all indicators and planning information. The conditions in which individual farms were starting the reforms varied widely and nothing or little was done to equalize them. And finally, the fundamental problem of releasing the enterprises of the abortive investments, imposing upon them in the past. They entered the new system with this often huge credit burden.

12471

CSO: 2600/1265

YOUTH DAILY REVIEWS ECONOMIC REFORM

AU220615 Warsaw SZTANDAR MLODYCH in Polish 19 Sep 83 pp 1, 2

[Joanna Solska article: "Neither Sideways Nor Backwards"]

[Text] Why are the mechanisms of economic reform being adjusted? Has the reform not brought the expected results?

If one only looks at the effectiveness of the economic reform from the point of view of the figures achieved, then the results are very satisfying, Minister Wladyslaw Baka said during the Saturday conference at the government press office. During the past 8 months we have achieved an 8.5 percent growth in production and a 17 percent rise in exports, and productivity has "jumped up" by 12 percent. However, one cannot fail to notice the following minuses as well: gaps in supply, constant price rises, waste, continuing disorganization with investments, and difficulties with restructuring our economy in favor of the market. That is why after 2 years of the reform we have made a detailed analysis in accordance with our initial plans, hence the corrections that have been proposed. This is neither a step backwards nor sideways, but is certainly a step forwards.

To put it briefly, the question is to continue to strengthen the three "S" of enterprises [independence, self-financing, and self-management], at the same time making central methods of influence over the economy more effective (fully respecting, of course, the principles of the reform.)

And now let us be more precise. What is the point of the proposed corrections which the government discussed at its 16 September session? What are the desired goals?

The corrections should "enforce" efficiency inside enterprises more effectively than we have observed so far. Thanks to these corrections, a good plant will feel the results of its activity more quickly. A bad plant will look bankrupt in the eye sooner unless it alters its methods of management.

The changes are also meant to strengthen the mechanisms of restoring market equilibrium. Reform does not have to push up inflation at all, Minister Baka

stressed. Although we cannot promise another price "freeze," price fluctuations should not make the standard of living of society in general fluctuate. In a word, prices must rise much more slowly than up to now.

The need to restructure the economy has been spoken about for a long time, and not just since the time the reform commenced. Unfortunately, this has never been achieved. Now the need has become urgent. Corrections to the reform are a way to achieve progress in this matter. Success, however, does not only depend on better or worse ideas on how to carry out this restructuring. It depends mainly on those who implement the work and on society's support.

In order not to make these words sound empty, we all condemn waste, we want to have more goods on the market and at the lowest price, and so on. But if an obviously ill-functioning plant goes bankrupt and its work force has to look for other employment, will these people not be against the idea of restructuring?

Before I start discussing prices, I will say a word about the costs which influence these prices. The proposed corrections should stabilize these costs. They should make the structure of costs clear and understandable even to a layman. They firmly stipulate what can be thrown into a bag labeled "costs" and what has to be financed from a purse labeled "profits." For up to now, all bills have been eagerly thrown only into the bag of costs.

The corrections should gradually restrict controlled prices. For these prices make the profits of plants too dependent on costs, and therefore do not encourage a reduction in costs. However, contracted prices will be extended wherever necessary (for example, the prices of raw materials or semimanufactured products which have an important effect on the prices of finished goods).

What else will be hidden behind the caption "contracted price"? We know that faced with the deep market disequilibrium, some people are in a position to (and others quite simply have to at the cost of having to make sacrifices) pay prices for essential goods which are out of proportion to the production costs of the given goods. If in addition the producer of these goods has a monopoly over them (and this is not rare in our economy), he prefers to raise prices rather than increase production.

Such a producer will not find this worthwhile now. For although he will "contract" the level of prices, nevertheless the taxation authorities will make sure his profits are not too great. In other words, some of the money will go to the state budget. If a factory wishes to raise its profits, it can only do so by increasing production.

It is also worth considering the growing phenomenon of government orders. Although the idea behind them remains the same--the government guarantees better supplies to factories in return for the most important goods on the market--the implementation of this idea will be slightly different than up to now. Orders will not be gradually placed to every factory so that everyone has something to do, but only to the best ones--the ones that produce the most efficiently, and therefore the most cheaply.

Perhaps it will come about that those who work the worst will be forced to alter production. Unless, of course, they want to go bankrupt.

It is impossible in a short report such as this to discuss even superficially all the proposed corrections to the reform. However, the details of these corrections will be published in a few days. So enterprises will have some time to discover how they will stand next year, for that is when the changes will take effect.

CSO: 2600/24

MEASURES TO ACHIEVE ENERGY INDEPENDENCE EXAMINED

Bucharest ENERGETICA in Romanian Apr 83 pp 201-204

[Report on conference entitled "Romania's Energy Independence" by Dr Eng Constantin Bratianu, Bucharest Polytechnic Institute]

[Text] On 3-4 December 1982, the Power Generation School of the Bucharest Polytechnic Institute held a prestigious scientific meeting entitled Romania's Energy Independence, dedicated to the National Conference of the Party and the 35th Anniversary of the Republic.

The concept of energy independence was extensively discussed by the 12th Congress of the RCP, where it was established that by 1990 all the fuel and energy needs of the country will be met from domestic resources. At the of 8 October 1982 Plenary Session of the Central Committee of the RCP, Nicolae Ceausescu, secretary general of the party, pointed out that "on the basis of the present situation it can be estimated that we meet all the conditions to fully cover from domestic resources, by 1985, the entire consumption of primary energy and achieve energy independence." The fulfillment of this major objective of our country's energy policy, with all its implications for education, research, and production, provided the orientation of the entire scientific meeting.

The conference received 292 papers from 503 specialists from industry, design, research, and education. Of these, 273 were presented at the meeting, along with five unannounced communications.

The plenary session heard eight informational review lectures from authoritative specialists representing ministries, as well as institutes and institutions for research, design, and education, whose activities are intimately associated with energy.

The conference was opened by Prof Dr Eng C. Bala, prorector of the Bucharest Polytechnic Institute, with a brief presentation of the structure of energy education, and of its achievements in training specialized personnel in this field. He thus mentioned the creation, within the Power Generation School, of a new Industrial Power Plant department, which while teaching electric power, hydroelectric power, thermal power, and nuclear power concepts, also trains

power engineers. Over 90 percent of the school's graduates work on senior projects whose topics are provided by research and design institutes, and by economic units of the MEE (Ministry of Electric Power). At the same time, professors and researchers at the school and institute see to it that together with sound specialized training, the future engineers also effectively participate in scientific research, solving current and long range problems in the power generation field.

Mihai Florescu, corresponding member of the Romanian Academy, minister secretary of state at CNST (National Council for Science and Technology), showed that the primary energy structure of our country is established through a broad program of scientific and technical research, the formulation of efficient technologies for exploiting lower grade coal and building nuclear plants, a program for the complete utilization of the hydroelectric potential with high capacity plants and microplants, the formulation of efficient technologies to produce thermal and electric power from inexhaustible solar, wind, geothermal, hot rocks, waves, and other sources, as well as through technologies and equipment to recover heat from hot furnace gases, stack gases, and low temperature residual water.

Eng Ionescu Constantin, vice-chairman of CNA (National Water Council), presented our specialists' interests in better management of our water resources, whose total usable potential is evaluated at 50 billion cubic meters (mc) (of which the Danube contributes about 20 billion mc). Existing hydroelectric plants have an installed power of 3460 MW and an average power production 12,700 MW/year, representing about 30 percent of the total hydroelectric potential and resulting in fuel savings equal to 4.5 million tcc (tons of conventional fuel) per year.

Dr Eng Ioan Maiereanu, director at MEE, presented several important features of our country's energy policy, and the measures taken by MEE units to save energy and fuel. Some of these are: implementation of an information system to monitor and analyze fuel consumptions in CIPEET (Industrial Central for the Production of Electric and Thermal Power) power plants; review of the electric power measurement system; formulation of technical and economic data banks for general and industrial power generation; recalculation of hydrologic data; flattening of load curves; and increasing the efficiency of household and public electric loads. Similarly, MEE design units are also working on means to save secondary energy resources for other ministries, actions which have been established separately. These measures are expected to result in total fuel savings of about 2,694,000 tcc, in which electric power savings will amount to 3,264,000 MWh/year in 1985.

Dr Eng Calin Mihaileanu, director general at ICCE (Central Institute for Energy Research), spoke primarily about the priorities of science and technology in power generation, such as reducing limitation factors in various ways (in the case of primary energy), intensifying extraction processes by increasing the recovery factor in the extraction of fuels from deposits, by increasing the productivity of equipment and labor in exploitation, drilling, and extraction, and by utilizing deposits in inaccessible locations and those with poorer compositions. Interesting ideas were presented about the consumption of energy resources and about energy processing.

Dr Eng Florin Tanasescu, director general at ICMUEE (Central Institute for Machine-Tools, Electrical Equipment, and Electronics), and Eng C. Popescu, head of the laboratory for new sources of energy, referred in particular to the program for exploiting unconventional energy sources and developing appropriate technologies for this exploitation, intended to provide additional primary energy, to replace hydrocarbons with low grade coal and fuels with biomass hydrocarbons, and to derive greater value from solid fuels. It is thus expected that total capabilities of about 5 million tcc will be placed in operation with new sources by 1985, among which: a) 35 percent will be thermal and electric power; b) 40 percent will be synthetic fuels; and c) 23 percent will be synthetic engine fuels. At the same time, they presented the major directions in the introduction of new energy sources and the specific problems in their superior exploitation, these being the major milestones in the research activity.

Dr Eng Iancu Dragan, director general at ICEM (Institute for Metallurgical Research), presented significant industrial power data from the metallurgical industry. The largest energy consumers are the primary iron production sector and the processing sector, with about one-quarter of the consumption. Hence the need for technologic innovations that would substantially reduce energy consumption in addition to fulfilling their basic technical purposes. During the last 10 years for instance, the integrated energy consumption has decreased by 21.42 percent in iron manufacturing, and by 19.58 percent in steel production. For heating, the major activity is oriented toward the general utilization of appropriate burners for the whole range of fuels used in the steel industry, beginning with natural gases and oil, and ending with gases whose caloric power varies between 750 and 4500 kcal/Nmc.

Eng Mircea Cardu, director at ICSITEE (Institute for Scientific Research and Technologic Engineering for Power Equipment), referred to some problems that are specific to power generation equipment. In the construction of power plant boilers, construction improvements have been made on the 1035 t/h boilers, thus reducing the average oil heat input from 25-30 percent to 6-7 percent at the Rovinari and Turceni thermoelectric power plants. He also mentioned the following directions of development in the industry for thermal power plant equipment: a) manufacture equipment designed to generate power with new, low grade solid fuels, as well as with combustible wastes; b) increase power generation parameters; c) diversify production to increase competitiveness and the share of exportation in the production of this equipment; d) produce thermal power generation equipment to recover secondary resources and exploit low potential thermal energy sources.

The papers and discussions of Section I focused interest on problems associated with energy savings as a fundamental feature of our country's energy policy. A number of valuable ideas were advanced in this respect. For instance, energy savings must not be viewed as a separate effort, but as one component in the functional optimization process of power systems, whose major manifestations are the consumption-production abscissa, and design-installation-exploitation along the ordinate. The energy savings problem must thus be considered as early as the design of installations and industrial processes, as well as the conception and construction of installation

locations, and must be consistently monitored during exploitation. The mathematical modeling of power generation technical processes uses Leontief type models, vectorial models based on inequalities, as well as analytical models based on equations for the conservation of matter, energy, and impulses. A number of papers suggested or presented concrete results from computer implementation of these models or of power balances.

Some interesting data was also presented. Bucharest's total energy consumption is currently about 7 million tcc, having remained practically constant for the past eight years even though the city's industrial production has grown by about 50 percent. This is due to the technical and organizational measures taken since 1976 for the city's consumers. During this period, the value of the average utilization efficiency has increased from 49.17 percent to 54.90 percent, while specific power consumption expressed in tcc/million lei of industrial production has dropped by 26.4 percent.

For transportation, the processing and distribution of 1000 mc of water consumes 60-600 kW. These very broad limits indicate that many possibilities still exist in the design of water supply system to minimize the consumption of electric power.

Also interesting is the concern of the Energomontaj Trust in saving power at work sites. Some of the measures they have taken are: a) using solar energy to heat utility water; b) abandoning the welding of large boilers (1035 and 525 t/h) and bolting them together instead; c) prefabricating piping.

As an integral component of our party and state energy policy, technical energy forecasts were the topic of the papers presented in Section II. The problems discussed covered the following major orientations: a) integrated analysis, and economic and technology energy forecasting for the national economy; b) providing the resources needed for the future, primarily through the energy savings of unconventional sources and by considering nuclear power; c) developing the production of lignite and soft coal and the underground gasification of coal; d) expanding the use of heat pumps; and e) storing thermal energy.

As part of the forecasting of technical energy savings, the speakers considered the technologic prospects of energy intensive processes in metallurgy, chemistry, and other branches, so as to reduce the consumption of fuels, power, and energy intensive materials.

The papers devoted to nuclear power stressed its production efficiency compared to conventional processes (22,000 MWh can be produced by the burning of 2450 tons of soft coal, the fission of 1 kg of U-235, or the fusion of 232 g of D-T mixture), and the progress made in nuclear fusion engineering.

In accordance with the policy of deriving greater value from low grade solid fuels by burning them in thermal power plants, special attention was devoted to lignite extraction. The total production of extracted lignite has steadily

increased from 3,145,000 tons in 1960, to 29,014,000 tons in 1981, 51.91 percent of which was extracted from open pit mines. This rate will continue in the future, both by modernizing present mining units, and by exploiting new deposits.

The first underground lignite gasification experiments in our country were performed in the Rovinari zone, where a lignite vein 4-5 m thick, located at a depth of 30 m, was burned to produce a gas with an average caloric value of 800 kcal/Nmc.

The papers on the storage of thermal energy clearly showed the promising results obtained so far with HITEC type materials fabricated from domestic products. These eutectic blends of nitrates and nitrites have proven to be good storage media up to 450 degrees C.

Also interesting were the results obtained by INMT (National Institute for Thermal Engines) in using biogas to drive power generators of 25 and 50 kW, intended primarily for the livestock sector. The steady operation of a 50 kW generator which is meeting about 75 percent of the power needs of the 30 Decembrie purification station, is a promising argument in this respect.

Section III was devoted to papers on equipment for thermal power generation, and on their optimum operation in power plants. The results presented can be grouped in the following research orientations:

- a) Defining the magnitude of, and achieving solid fuel management for high-power plants, in order to improve their coal supplies. Among these are the construction of defrosting tunnels for railway cars ahead of unloading stations, providing at least two types of coal of different qualities and two unloading lines, and building crushers whose plates are electrically heated;
- b) Research of burning processes in order to use for power generation purposes, low grade solid fuels from new deposits (Sf Gheorghe-Covasna) and bituminous shale from the Eastern Carpathians, and to eliminate hydrocarbon consumption for sustaining flames in lignite fired boilers;
- c) Research to determine optimum operating parameters and performances in ancillary boilers and installations;
- d) Research to optimize the protection and construction of thermal turbines and their ancillary installations. Some of the results covered the possibility of using carbon dioxide turbines to exploit low thermal potentials;
- e) Control the economic operation of thermal power plants and reduce specific fuel consumption;
- f) Use computers to control the technical processes specific to thermal power plant installations, and to numerically model thermal-hydraulic phenomena with finite differences and finite elements.

Section IV combined papers on design optimization and on the exploitation of the hydroelectric power potential. The ideas covered the following orientations: a) optimizing the design of hydroelectric water management plans and the exploitation of reservoirs; b) mathematical modeling of water transportation through conduits and canals, with reference to polluting agents; c) research to optimize the utilization of pumping stations.

The mathematical modeling of mass transfer and heat processes, and its use to study fog phenomena caused by heat pollution of the water, has led to very interesting results about the operation of the Danube-Black Sea Canal. The overheating caused by the discharge of cooling water from hydroelectric plants has created intense fogs and greatly reduced visibility.

For the country as a whole, the total volume of hydroelectric storage is about 10.6 billion mc, of which about 2 billion are currently being used. The difference consists of storage reserves for flood control. Using modern forecasting methods (local, space, global), it is possible to greatly increase the energy stored in existing or planned hydroelectric facilities.

The numerical modeling of fluid dynamics in headwater races at hydroelectric plants has led to interesting conclusions about the influence of hydraulic conditions on the exploitation of hydroelectric generators. It was thus observed that in the absence of a counterslope, the dead water extends over a significant area if the roughness of the upstream bed is relatively small.

The fulfillment of the land improvement program over the planned tillable area, which at the end of this year will reach more than 2,300,000 ha, requires the construction of high efficiency pumping stations. An analysis of the means for obtaining these efficiencies and implementing them at existing installations, has led to significant power savings. Compared to present conditions for instance, the pumping of 5 million mc of water by a single high efficiency installation can result in savings of 36,545 kWh for pumps on the Rasova branch at SRPl Hateg, and of 207,038 kWh for the installations on the Vederoasa branch at SRPl Hateg.

Section V brought together papers dealing primarily with the construction of high performance hydraulic equipment. They were focused on the following areas: a) theoretical research in fluid mechanics and hydrodynamic stability; b) theoretical and experimental research in the operation of hydroelectric generator rotors, shrouded propellers, and turbine rotors; c) optimized design and exploitation of complex water treatment systems; d) computer aided design of Deriaz rotor blades.

The computer aided calculation and design of Deriaz rotor blades has led to the formulation of methods for fabricating three diagonal rotors to equip some hydroelectric plants in our country.

The theory of hydrodynamic stability is used to study the transition from laminary to turbulent flow. The occurrence of turbulence, directly associated with the stability or instability of laminar flow, is a fundamental problem in

fluid mechanics, and leads to important practical applications. For instance, this transition phenomenon is an essential parameter in designing, laminarizing, and testing hydro and aerodynamic cross-sections; in designing and building fluid components; in the modern design of combustion chambers; and in some cooling installations.

Theoretical and experimental research on water purification and treatment stations, which involve purification ponds of intermediate or great depth, have recently shown the advantage of using static or self-propelled ejectors based on the principle of fluid jet pumps. Initially used as auxiliary devices, ejectors are becoming independent aeration devices because of their relatively high economic performances.

Section VI covered papers on problems specific to the development of nuclear engineering in our country, and on the tasks included in the nuclear program proposed by the party. The discussions of the presentations fall in the following groups: a) experimental and theoretical research in the thermohydraulics of nuclear reactors; b) experimental and theoretical research in the physics of conventional and fast nuclear reactors; c) control and dynamics of nuclear reactors, emphasizing Xe poisoning phenomena; d) research into the operating behavior of steam generators, piping, and turbogenerators in nuclear power plants; e) research into nuclear risks and security.

The calculation of heat transfer between a wall and a flowing fluid inevitably uses the convection coefficient α . However, this implies a knowledge of the temperature distribution in the liquid and at the surface of the body. Since these temperatures are difficult to measure, especially in the case of nuclear reactors, other methods of calculation must be used, such as the conjugate heat transfer. This method consists in simultaneously solving the equations for heat transmission in the fluid and the solid body.

Nuclear security and risks are two complementary concepts of extreme significance in the design and exploitation of nuclear power plants. Although few works were presented in this session on nuclear security, they did discuss a number of essential aspects of nuclear risks and security. In addition, interesting references were made to the nuclear accident at Three Mile Island (USA).

The physics of nuclear reactors is an extremely complex field of analysis, in which theoretical research is increasingly based on numerical calculations with finite differences and finite elements.

Section VII gathered papers relating to specific problems in the exploitation of renewable energy resources. The topics covered were: a) theoretical and experimental research in the intensive use of wind and heat resources; b) the design and optimal operation of solar collectors; c) theoretical and experimental research in solar power plants; d) the use of solar energy for industrial thermal processes and for heating; e) the exploitation of geothermal sources and the energy of waves; f) specific calculations for gas and wind turbines; g) theoretical and experimental research for biogas exploitation.

Solar power plants with heliostats and tower, and with thermodynamic conversion, differ from other types of thermal power plants because of variations in the primary energy flow. The intensity of solar radiation follows a diurnal cycle, over which are superimposed random perturbations due to clouds, which can reduce it. Under these conditions, turbogenerators must be designed to operate reliably over the widest possible range of daily variations.

The determination of an optimum inclination angle for flat collectors is a complex problem, depending as it does on local latitudes and on weather conditions in the given geographical area. For the Timisoara area, for instance, the angle is 39 degrees and 4 minutes (January-December) and 30 degrees and 19 minutes (April-September).

Experimental research in the production and exploitation of biogas at the 30 Decembrie socialist agricultural enterprise, has produced very interesting results. From June until December 1982 for instance, the 5 mc of water per hour installation, produced 20,000 mc of biogas in a constant flow. This means that an amount of CBO5 = 10 kg/mc produces 8 mc of biogas, of which 5.6 are available for use, and the remaining 2.4 are used to operate the process. The latter amount is enough to meet all the energy expenditure of the installation, including the electric power required for agitation.

Section VIII covered works on the problems of electric power generation. The diversity of topics makes it difficult to group these papers in terms research orientations, one of the possibilities being as follows: a) theoretical and experimental research to determine electric fields around high voltage lines, with analysis of corona phenomena and the behavior of insulator chains; b) optimizing electric circuits and the cross section of conductors for local technical services in power plants; c) research on the operating reliability of electric installations and power plants; d) research in the optimum dimensioning and operation of electric networks; e) optimum control by means of numerical systems.

A knowledge of the actual distribution of electric fields around high voltage lines makes it possible to adopt a more correct physical model of corona discharge, and contributes to a more appropriate determination of the influence of corona envelopes on coupling coefficients. The distribution of the electric field intensity in the corona envelope depends on the assumptions made about space charge distributions. For instance, if we assume a uniform space charge distribution and a wave of 16/80 microsec, the intensity of the electric field varies between 10 kV/cm and 20 kV/cm depending on the voltage amplitude, at the negative voltage polarity.

An analysis of future designs for thermal power plants has led to a proposal to produce power with 60 MW generators at 6.3 kV, thus eliminating the 10.5/6.3 kV transformers and obtaining higher operating indicators.

Theoretical research on the optimum sizing of cross sections for local service cables in power plants has led to the formulation of a new calculation technique and to guidelines for selecting economic cross sections at the design stage.

In order to optimize the operation of diesel generators for internal services at the Cernavoda power plant, a program for sequential starts was formulated and tested on an experimental model with good results.

Section IX combined papers on power generation networks and equipment, as follows: a) theoretical research on the operation of electric networks; b) theoretical and experimental research on the construction and improved performance of electric switches; c) improved performance of hydroelectric generators; d) theoretical and experimental research on the power supply and operation of electric arc furnaces; e) research to optimize transformers.

The presence of an electric arc during alternating current interruptions distorts its waveform from its sinusoidal shape. While an alternating current can be interrupted under relatively easy conditions, the interruption of inductive currents, which is the general case for any electric power circuit, occurs under more severe conditions. In this case, extinction occurs only if at a given distance between contacts, the arc striking voltage is higher than the applied voltage.

Loads on electric breakers during switching, influenced by electric arcs, cause switching overvoltages when currents are cut by switches. The Coanda aerodynamic effect was used to improve the performance of compressed air breakers.

The experience with hydroelectric generators under reactive power loads has made it possible to evaluate their performance diagrams and find ways to provide additional support for radial bearings under radial loads caused by electromagnetic unbalances.

Theoretical and experimental research into the operating characteristics of arc furnaces under sinusoidal and non-sinusoidal conditions has made it possible to design a high power filter installation using the principle of power separation in an three-phase, non-symmetric, and non-sinusoidal system.

Section X grouped papers on the complex topic of modern methods of design, simulation, and management of electric networks and systems. The major orientations considered were: a) research in the cybernetics of power systems and electric distribution networks, in order to reduce their own consumption; b) optimum dispatcher control of electric systems and networks, with the possibility of computer assistance; c) numerical research with computer modeling of operating conditions in electric systems and networks; d) optimum compensation of reactive power in generator networks.

The most noteworthy mathematical models of power generation cybernetics were the models of production operators, the transformer (L ; Z) models, and the models of generators with two reaction loops. The expression of these models in system design involves the monitoring of activities along production-consumption technical cycles (power chain), and along the design-installation-exploitation cycle (system condition). Detailed analysis at the power enterprise level (IEV, IRE, ICE) is carried out by formulating function models as well as an integrated model for the entire power technology activity.

The large number of participants at the sessions, and the scientific value of the discussions, has demonstrated the interest of specialists in this highly regarded meeting for those who work in electric power generation, the usefulness of repeating it on a permanent basis, as well as the need to communicate the results of scientific research in the energy field at a national conference which provides a valuable exchange of experience and a high quality reflection of the education-research-production triad. At the request of many of the participants, the leadership of the school has analyzed the possibility of meeting this need, and has taken some initiatives in this respect.

11,023
CSO: 2700/304

VIEWS OF TECHNOLOGY TRANSFER AIRED BY ECONOMIC JOURNAL

Bucharest REVISTA ECONOMICA in Romanian No 34, 26 Aug 83 pp 24-25

[Article by Lect Dr Yolanda Eminescu: "The Transfer of Technology and the New International Economic Order"; passages enclosed in slantlines printed in bold-face]

[Text] The elimination of the state of underdevelopment, the convergence of the levels of economic development of the world's countries by reducing the existing gaps, as a foremost objective in establishing a new international economic and political order, the only thing capable of giving stability to the world economy, presupposes, as Comrade Nicolae Ceausescu indicated at the National Conference of the Romanian Communist Party, "access on easy terms to the modern technologies of all states" within international economic collaboration based on fairness, equality and mutual advantage.

One of the important means of attaining this objective is /the creation of a suitable legal, social and economic framework/. The problems that must be solved in order to provide this framework are varied and complex: from the devising of permanent codes of conduct and technical and legal programs, to the proposals to revise the Paris Convention and the reforms made or expected in the national laws.

Starting from the idea that, in the current stage, the patent remains a privileged instrument in achieving the transfer of technology and that technological isolationism is neither a realistic solution nor a proper one, we will describe /the advantages and disadvantages of the current system of protection for inventions from the angle of the interests of the developing countries and the role of the license contract in attaining the objectives of the new international economic order/.

In the traditional conception and system of protection for inventions through the issuing of patents, their stimulative action is exerted /directly/ through the advantages given to the inventor, and, in the main, through the exclusive but temporary right of exploitation that he gets, and /indirectly/ through the spread of the new technical ideas.

As regards the spread of the new ideas and therefore the stimulation of the inventive activity of others, the action of the patents has been considerably

reduced due to the limited information that the description of the patents offers, a fact from which follows the need for additional information for putting an invention into application. In principle, the descriptions of patents should be complete, so as to allow the specialist to reproduce the invention. The complexity and, often, the sophisticated character of modern technology favor the practice of incomplete or even hermetic descriptions in which certain elements are not divulged, in order to later be the object of a separate contract. One of the consequences of this phenomenon is /the doubling of the protection/ by patent, through contractual protection, which has as an object the corresponding know-how and which, in the absence of regulation, permits all abuses. The know-how's percentage in the total transfers of technology to the developing countries has caused only an insignificant percentage of these transfers to still be achieved now through the patent.

At present, the patent often comes to have /an exclusively publicity function/, its role being just to indicate to those interested who the holder is with whom they should get in touch (even if, by hypothesis, the invention would not be protected in the country in which its utilization is sought), /which means/, in the final analysis, /a significant accentuation of the exclusive position of the patentee/, insofar as his rights extend beyond the territorial limits of the protection and, at the same time, go beyond the natural prerogatives given by the content of the patent.

As regards the direct stimulative role of the system of protection for inventions by patent, it has been influenced by the changes occurring in the proportions and organization of the activity of scientific research, which have turned the individual inventor-patentee into an isolated phenomenon, in order to make way for /company or department inventions/ (since they represent between 60 and 90 percent of all inventions patented). By this there has been produced /a shift in the patent's stimulative effect/, which now acts on the research activity of the big firms, to make a patent a decisive means of securing a privileged position.

The utilization of patents as instruments to stimulate technical progress presupposes the existence of /an activity of organized research/, capable of putting at the disposal of the inventors the better technical means and laboratories needed. But an embryonic national industry, the absence of an activity of national research, the financial and technological dependency and the lack of competent legal assistance are a few of the causes that stop the traditional patent from fulfilling its function of stimulating technical progress in the developing countries. Moreover, under these conditions, the protection of inventions by patents can become an obstacle for the development of national technical creativity.

However, the problem also has another aspect. While the stimulative role of the patent is small and sometimes nonexistent under the economic and social conditions of the developing countries, in exchange, its role as /a privileged support for the transfer of technology/ comes to the forefront and appears to be the most suitable way for these countries to reduce their economic handicap, which is the true cause of the defective functioning of the patent system. This is because the patent facilitates the achievement of the transfer of

technology for both parties, permitting /the selection of the technology bought, the investigation of its content and the identification of the holder/. These are all so many reasons for preferring the acquisition of a patent instead of unprotected technologies (know-how), whose real source and content cannot be determined exactly except at the end of the negotiations. To this is also added the guarantee that is represented by the possibility, for patented inventions, of resorting--in case of a violation of the rights acquired--to a suit for infringement, as well as that of being protected in such a suit brought by a third party.

But the indispensable condition so that, in this respect, the patent may become an effective instrument in the country's economic development is for the technology acquired through transfer to be /assimilable/ for national industry.

The transfer of technology is achieved either through /the industrial exploitation of the patent in the acquiring country/ or through /the importation of patented products/. It is obvious that the first of these forms corresponds better to the interests of the developing countries, whether it is achieved through the establishment of new firms or through the acquisition of licenses for foreign patents by the existing national firms. And it is essential to bear in mind that the benefit of exploitation in the developing country must be judged not only according to the savings in foreign currency gained by cutting out importation and the eventual receipt of foreign currency as a result of exportation but also, /in particular/, according to the fact that such exploitation permits a "sociological adaptation to technology."

All the indicated things lead us to the conclusion that one of the essential fields in which the legislator's intervention is necessary is that of the /license contract/, which is undergoing real expansion in international trade relations. Although it is quite rarely found in a "pure" form, the license contract has, in fact, invaded all other contracts in this field, from the research contracts to the various contracts for delivering turnkey installations. This is a fact that has caused some authors to assert that it is no longer possible now to establish a line of demarcation between the license contract and industrial cooperation. But precisely the decisive percentage of the license contract necessitates a regulation that would permit it to play, in technology-transfer relations, its natural role of an instrument to spread technical progress.

However, the truth is that, under the conditions of the contemporary scientific and technical revolution, the license contract tends to be changed from an instrument that allows the utilization of patented inventions, by eliminating the obstacle that the patentee's legal monopoly constitutes, into an instrument to favor and consolidate the de facto monopoly not only over unpatented technologies and knowledge but also over patented ones.

The alarming expansion of the abuse of know-how and of the restrictive practices has caused some countries, especially developing ones, to intervene with extensive national regulations in this field.

An examination of the different laws and, in particular, of the international practice allows us to discern a few /characteristic traits/ of the evolution in this field, in relation to the current realities.

a) The license contract is constructed in general as a /"sui generis" contract/ whose operation is no longer deduced by reference to common law and, in particular, to the contract of hire.

b) In this construction there is found /an expansion of the classic notion of the license contract/, conceived as an agreement through which an exploitation covered by an exclusive (privative) right is authorized, since the virtual disappearance of the "pure" license contracts in practice is accompanied by the appearance of contracts whose object is, at the same time, the transmission of protected technical solutions as well as unprotected and even unprotectable ones. The patent seems more and more often to be a nucleus around which revolve prestations having the most diverse objects.

c) The modern organization of industry has also caused /a change in the significance of the/ license's /intuitu personae character as a contract/, that is, a contract concluded in view of the personal qualities of the contractor receiving the license. What is decisive now are no longer these qualities but the characteristics of the firm that will utilize the object of the contract (structure, management and so on). There has been a shift from the subjective conception of the intuitu personae character to an objectification of it.

d) In the developing countries, the concern for preventing the abuses of the holders of technology has caused /extensive regulation/ of the license contract. And this has raised the difficult problem of a fair /balance between the provisions with an imperative character and those with a suppletive character/. The fact that the resolution of problems of countries whose levels of economic, scientific and technical development are very different is attempted by means of legal instruments conceived initially for equal partners does not allow these instruments to produce their anticipated effects. Which does not mean that more extensive regulation of the license contract is not of a nature to draw the attention of the contractors to the danger of accepting clauses that can easily become an obstacle in utilizing the object of the contract under normal conditions. Practice has demonstrated, for instance, the necessity of limiting the duration of a license contract to at most 5 years, given the rapidity of the obsolescence of the technical means under the present conditions.

This is why the unanimous opinion of the specialists is that commutative justice is hard to achieve in this field, as, in fact, in other fields too, with exclusively legal means and that /the problems of the transfer of technology, as an instrument in the service of development, cannot get a proper solution except within a system of effective international cooperation/. Along this line, the efforts within the conferences to revise the Paris Convention have not yet led to the results anticipated by the developing countries that pursued first the encouragement of local industry, by establishing deviations from the principle of the national treatment in order to avoid the abuses of the holders of technology, and to the regulation of the obligation to exploit the patents

obtained, so that the technical knowledge that they contain may be effectively utilized in the country that issues them.

One important aspect for raising the effectiveness of cooperation is also that of prohibiting the restrictive clauses imposed by the suppliers of technology.

e) Nevertheless, a certain change in the content of the license contract obliges us to also note /the effectiveness, within certain limits, of the legal techniques/. It is a question of a manifest evolution of the license contract toward a true /contract for collaboration or cooperation between the parties/.

This change has been achieved, in the main, through /the expansion of/ its /obligational content/, through the appearance or the coming to the forefront of characteristic obligations, including:

The obligation of information about the subsequent improvements made in the object of the contract;

The obligation of technical assistance in its two forms: the furnishing of the documentation needed for using the object of the contract in the best way and the training and instruction of the personnel of the recipient of the license.

But, besides the strictly legal problems of national regulation of the license contract, which we have tried to point out, another problem of international cooperation and legal policy must be solved. In view of the failure of the attempts thus far in the international conferences, it is necessary, with greater and greater urgency, to identify and evaluate the elements on which it is possible to support /a rational policy in the matter of the transfer of technology/, which means the finding of a common ground for the interests of the developing countries and of the strongly industrialized countries. Moreover, the growth of the profitability of the firms is directly conditioned by the development of their own scientific research and of the activity of innovation. The vitality of the firms depends directly on the rate of assimilation of new products and the rate of renovation of production and of the technology utilized.

The providing of a favorable and stimulating environment for the development of intellectual creativity in general and especially in the technical field is not only the essential condition for the economic and social development of each particular country but also the condition for effective and mutually advantageous international cooperation.

It is an undeniable truth that /the same rules of law, applied to countries with different levels of development, do nothing but worsen the inequality that separates them/.

As far as it is concerned, our country has repeatedly expressed its position on these matters, stressing firmly the necessity of /access free from obstacles of any kind to the gains of contemporary science and technology/ as an objective condition for the progress of each nation.

12105
CS0: 2700/305

COAL MINERS FAIL TO FULFILL NINE-MONTH PLAN

Bucharest SCINTEIA in Romanian 1 Oct 83 p 3

[Article: "The Coal Production Plan--Fulfilled and Over-fulfilled in Every Mining Unit!']

[Excerpts] In all sectors of activity, and especially in the coal mining industry, the exemplary fulfillment of the physical production plan is one of the priority tasks, of the greatest importance for the achievement of the economic objectives for this year and for the entire 5-year plan. As we know, this year, on the basis of the tasks formulated by Comrade Nicolae Ceausescu at the work conference of the Central Committee of the Romanian Communist Party with management cadres, specialists, and workers in the mining and geology industry in January, a number of measures have been taken to improve mining activity, such as implementation of a continuous work program, improvement of the organization of labor, extension of the overall contract system, etc. As an additional sign of the attention which the party leadership assigns to this vanguard detachment of the working class, workers in the mining industry have been among the first to benefit from wage increases, beginning on 1 September.

Considering the measures which have been taken to equip the mining units with modern devices and installations, with high productivity, it can be said that, this year, conditions have existed for a substantial increase in the production of energy coal and coking coal. The efforts which the miners have made in the first 9 months of this year have resulted in an increase in production of 5.2 million tons compared with the same period in 1982. This confirms that possibilities continue to exist for increasing coal mining yields and providing for all the needs of the national economy, under the best conditions. We are stressing this because the tasks of the plan for the past 9 months were not fulfilled in their entirety. Therefore, in the last quarter of the year, it is necessary to act with more determination to make up for lags and to fulfill the plan in an exemplary manner.

The emphasis should be placed, first of all, on increasing the production of coal for coke and semi-coke. According to information from the Ministry of Mines, during the past 3 days, the production of coal for coke and semi-coke registered a noticeable increase in the units in the Jiu Valley. However, the daily results are about 2,000 tons of coking coal less than the plan.

Therefore, it is necessary that decisive, effective measures be taken in Lonea, Uricani, Barbateni, in all the mines in the Jiu Valley, to strengthen labor discipline, to achieve a better use of work time and available equipment, and to increase yields in each stope, so that the increase in production during recent days can continue and increasingly larger quantities of coking coal can be delivered to the iron and steel combines.

Real possibilities exist for increasing the production of energy coal. During this period, when only a few days remain before the arrival of cold weather, a perfect organization of labor and a better collaboration between the units which produce and consume energy coal must be ensured, so that the specified supplies of lignite for the winter can be secured as quickly as possible. Currently, there are some shortcomings in transporting the coal and unloading the coal trucks at the thermoelectric power plants. In the mining units there is a stockpile of more than 1.2 million tons of lignite. In the Motru, Rovinari, and Ploiesti mining combines and in the Horezu, Salaj, Mehedinti, and Voivozi mining enterprises, coal mining activity has begun to be impeded by the fact that there is not an adequate supply of trucks at the loading points.

CSO: 2700/2

END